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THE
THEORY AND PRACTICE
OF
MEDICINE.

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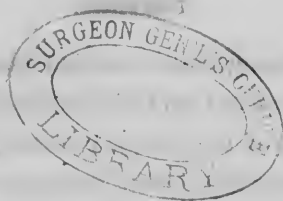
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PREFACE.

THE objects of this treatise are threefold. First, to show how the present erroneous, deceptive and injurious names, general views and theoretical opinions of the nature and causes of deranged action in the human system, came to be adopted by the members of the medical profession and by the people. Secondly, to explain more properly the true nature of the human system as a whole, the causes of its actions or life, and what constitutes healthy action in the human body. And thirdly, to point out the causes of deranged action, or what is called "disease," and the proper means to be resorted to to restore deranged action to the healthy standard.

It is a fact, which none can with truth deny, that when the groundwork, or hypothetical positions upon which the present allopathic system of therapeutical medicine is based, were introduced by Dr. WM. CULLEN, Professor of the Institutes and Practice of Medicine in the University of Edinburgh—in his opinions of the marsh miasmatic origin of fevers; his views of an innate principle in the body, which he termed the "*vis medicatrix naturæ*," and which he supposed possessed to a certain extent

the power of producing what is called fever, to expel from the system offending causes; and his nosological arrangement into classes, orders, &c., of the diseases of the system, which are the results of attempts by that innate principle to expel those offending causes, agreeably to their supposed natural affinities to each other—there was, at that time, no knowledge amongst men of the real uses of the lungs in the economy of life. Nothing was known of the compound nature of atmospheric air, of oxygen and nitrogen gases, or of the decarbonization of the blood in the lungs; nor was there anything known of the source of animal heat to the body, and but little was understood of atmospheric pressure upon the earth's surface and all other matter, or of its capacities for rarefaction and condensation, or of its expansibility by heat; and, of course, nothing had been correctly attributed by the members of the medical schools to these great natural causes as affecting animal life, or the actions of the system necessary to the full development of the organization of the body.

But since about the year 1789, at which time the above hypothetical positions were entertained and promulgated by Dr. CULLEN, a knowledge of these things has been gained, and there can be no doubt, we believe, resting on the minds of any persons at the present day, that they do act as powerful causes to influence the action going on in, and the proper development of the system; and that every change in the air in its purity, in its pressure upon the earth's surface and all other things, in its state of rarefaction by heat, and in its commixture with other volatilized æriform gaseous matters, must produce corresponding effects, for good or evil, upon the action going on in the system, and consequently upon the development of the body.

But, notwithstanding all this accumulation of knowledge

amongst men, if there have been any changes in either the theory or the practice of the allopathic school of medicine since this knowledge has been gained, and in consequence of it, the author of the following remarks is not aware of them, and he can say with truth and sincerity that he has for the last fifteen years been looking and hoping for changes in both from these causes, but up to this time he has been disappointed.

The author, believing that it is the duty of every person, whose time and opportunities have placed it in his power to do so, to note facts which have recently become known to men, and to draw inductions from them and from the laws of nature, by which those facts are caused and accounted for, has submitted both the facts and inductions to the test of time and experience; and found that both are not only true in themselves, but that a knowledge and a due appreciation of them and of the laws of nature by which they were brought about, would be of inestimable value in the promotion of the health and happiness of the people; and he therefore deems it incumbent upon him to make such facts and inductions known, and as far as possible to indicate the laws of nature which cause and control them.

The author of the following remarks and observations has now been studying the healing art forty years, both theoretically and practically, having commenced the study in the year 1811. The first twenty-five years of that time were spent with a moderate share of confidence in the truthfulness of the opinions and practices of the allopathic school of medicine, but the progress of science generally, and the discoveries which were made—and more particularly as to the uses of the lungs in the animal economy; the decarbonization of the blood, and the development of animal heat in the system; the nature of what is called fever, &c.; the peculiar construction of the heart, its auricles, ventricles

and valves ; the arteries, capillaries and veins ; the difference between arterial and venous blood ; the pulse and its peculiar indications, &c.—all of these, aided by much observation and thought, and these supported by the happiest experience, both as to the restoration of healthful action in the system and its maintenance in that state in many cases, and in classes of cases in which the members of the allopathic school had failed to relieve, have all served to produce, to strengthen, and to confirm in his own mind the truth of the following observations ; and he confidently hopes and believes that, if others will read and study them attentively, they will produce the same effect upon their minds.

THE AUTHOR.

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INTRODUCTION.

ALL motion given to matter is regulated and controlled by the fixed and unalterable laws of the Creator. Whether that matter constitutes the body of the sun—of a revolving planet or a circling comet—an organ in the animal system, or a vegetable fibre—the body of the smallest insect which crawls upon the earth's surface, or wings its way through the air—motion in all is governed by God's laws; and so long as these laws are obeyed, and motion is kept in due proportion to the requirements of each, order and harmony will prevail amongst the first, and life and healthful action with the latter of these creations.

But, with the human race, there are two causes which may interrupt that regularity, harmony, and due proportion of motion, which constitute healthful action in their systems; which interruptions may, and with millions of the race do, go so far as not only to destroy healthy action, but even life itself.

These two causes are: First, the peculiar organization of the human system, which, in order to be capable of sustaining the higher attributes of the species, had necessarily to be made more delicate and complex in its construction than those of the inferior animals. Secondly, man having to exercise these higher attributes of organized matter, but being ignorant of the laws which give and govern motion in his system, becomes himself, but too frequently,

the cause of interrupting that equality and harmony of motion, which produce life and healthful action, by violating the laws which have been given for their government. Hence the great necessity for him to learn and to obey the laws of the Creator which produce, and, if violated, may destroy his health and his life.

It is true that, so perfect has been the work of Almighty goodness and wisdom, that thousands of human beings daily live in the enjoyment of health, and that many thousands live to old age without knowing much of the laws which govern the motions going on in their bodies ; but, upon inquiry, it will be found that they have been governed in their conduct by a saving and prudential course, which, if investigated, will be found to be in accordance with the laws which produce healthful motions in the system.

It is true, also, that to the human system has been given, by its good and wise Creator, a wide range of conservative powers, by which it can accommodate itself, very often, to the circumstances under which it is placed. And it is true, likewise, that the human system would continue its healthful actions until the end, (death,) from the operations of its own laws, if it never came under the influence of causes, the effects of which reach beyond the range of the conservative powers before mentioned ; and which causes produce effects which militate against healthful action so strongly, as, very frequently, to destroy life itself. Hence the great necessity which exists of man's keeping himself advised of the causes which can destroy healthful action in his system, as well as with the laws by which that action is produced.

By the discoveries which have been made of the laws of matter, since about the commencement of the present century, the laws of motion and of life, in living, organized matter, have been shown to be simple, plain, and easily understood by all who will study them. And not only so, but their truth may be easily tested.

And it may be asserted, without fear of successful contradic-

tion, that if all the old theories of diseases in the human system, and all practice of medicine founded upon them, which are not in accordance with these newly discovered laws, were entirely swept away, the people of the world at large would be as much benefited thereby, as they were by the total abrogation of the old nomenclature of chemistry, and the substitution of the new one in its place.

The laws which govern life and healthful action in the human system are plain and simple when once understood, and are easily attended to in practice.

We are taught by the late discoveries in science, that the air we breathe, in its pure state, is composed of about 77 per cent. of nitrogen and about 23 per cent. of oxygen gases ; and that the oxygen of the air, when inhaled into the lungs, comes into contact with the blood ; that a portion of it unites with the iron of the blood ; and that another portion unites with some of the carbon of the blood, and forms carbonic acid gas, and thus purifies the blood. Whilst, at the same time, the oxygen changing from a perfectly gaseous state into a fixed state in the iron of the blood, and from the perfectly gaseous state into one less so, by its union with the carbon of the blood, and forming carbonic acid gas, a large quantity of heat is given out, which becomes the vital or animal heat of the whole system.

By this process of breathing we discover that the blood is both purified and warmed. It follows, then, as a certain consequence, that if the atmospheric air, breathed into the lungs of a human being, is not in a pure state, it is not in a proper state either to decarbonize the blood by uniting with its carbon, or to oxydize it by uniting with its iron ; nor can it give to the system its proper quantity of animal heat ; consequently, such air, when breathed, is calculated to put the solids and fluids of the body in an improper state for the continuance of the healthful action of its organs.

But, although these philosophical truths are now admitted by all men of science, it is a fact which is worthy of remark, (and shows, too, how pertinaciously the human mind is disposed to

adhere to errors of opinion derived from education,) that the allopathic schools of medicine still cling to the old doctrine, that deranged action in the organs of the system, (diseases,) and an improper state of its solids and fluids, are caused by that indescribable and intangible thing called marsh miasma, being taken into the stomach with the saliva, &c., and there coming into collision with another imagined power, called the "*vis medicatrix naturae*," a conflict ensues which is the disease; and, in this way, continue to give a kind of mysterious origin to an effect, which, at the present day, would otherwise be understood as a natural result arising from nature's laws, and brought about by natural causes. These errors being taught, even at the present day, in these schools of medicine, the great mass of the people look upon deranged action in their systems as something supernatural and incomprehensible, and expect of the physician that he is to find out and administer some specific remedy which is to operate upon and destroy the supernatural agent which is acting upon them. And if the wild hope is given up by some people, that there is yet to be found a universal panacea for all diseases which can effect the human system, they fly to another which is equally fallacious—that there is some remedy in the great apothecary's shop of nature, which is specifically designed by Providence to cure its particular disease; and the great object with these is to find out which particular remedy is best adapted to the cure of each particular disease. This constitutes the homeopathic system of medicine.

So firmly fixed have these delusive views become in the minds of the people, as to the nature of diseases and their remedies, by the erroneous, unphilosophical, and unscientific manner in which these subjects have been treated of in the schools—and particularly since diseases have been arranged into classes, orders, &c.—that there is scarcely an individual to be found, who does not indulge in the hope, and perhaps believe, in defiance of all past experience to the contrary, that there is yet to be found some specific remedy for the disease called consumption, thus giving into the belief that the Author of Life makes

the disease to destroy life, and then makes the remedy to cure it.

How long the people are thus to be induced to grope in darkness, ignorance and error upon this highly important subject, is a serious question with the philanthropist and lover of nature's laws. For, just so long as these errors—as to the true nature of what deranged action (disease) in the system is, and as to the proper object for which remedies should be given—continue, just so long will they be imposed upon by quacks and their nostrums.

We here use the expressions “quacks and their nostrums,” and will define what we believe constitutes quackery: it is wherever and whenever a remedy is used or prescribed, under the belief, hope or expectation that it will exert some influence, or produce some effect upon the disease for which it is given directly, and independently of its general effects upon the system.

This, we think, must be the true explanation of the term quackery; because, should a remedy be given from philosophical inductions, drawn from its known or supposed effects upon the organization, the use of such a remedy cannot properly be called quackery—whether he who prescribes it ever gave a dose of medicine before or not; nor does the act of giving medicine, the effect of which upon the system is not known and appreciated by him who prescribes it, as the cause of cure, lose its title to quackery; because he who prescribes it has been in the habit of prescribing for years before; or because he has a diploma in his pocket and gives medicine by license.

Unfortunately for the progress of the healing art as a science, writers and lecturers on the practice of medicine have attempted to give names to all the combinations of symptoms, as they are generally found associated together, under the general head of “diseases,” and to classify and arrange them into orders, classes, &c., for the purpose of facilitating the study of them by their names, symptoms, &c., and to simplify the practice of medicine in their cure. But, unfortunately for the sick, whilst this arrangement may enable the student of medicine to prepare

himself better to answer such questions as may be propounded to him in the green-room, it also gives to his mind a bias in favor of the belief in the regularity and fixed nature of deranged action in the human system, which it never has had nor can have. It would be as easy to classify the tints of color reflected from the morning clouds, or to describe their continually varying forms, as it is to classify the different grades and combinations of deranged action in the human system.

But let us not despair of improvements being made in the practice of medicine, to relieve states of deranged action in the human system, called diseases ; for it is a fact, that the cure in surgery was, some years ago, based upon somewhat similar faith and doctrine to what the cure of diseases is at the present day. Then the surgeon believed that his remedy healed the wound to which it was applied, by its own inherent powers ; and that the remedy had to be varied to suit the kind of instrument the wound was inflicted by, the depth of the wound, its size, location, and to many other peculiarities connected with it, &c. But no intelligent surgeon at the present day thinks of attributing the cure of a wound to specifics or nostrums ; or believes that the curative process is carried on by his remedy. But he simply inquires into the general health of the patient. That being found right, he places the wound in the most favorable situation for the curative operations of nature to go on ; and patients are now discharged in half the time they were formerly.

But, on the other hand, the inquiry may be made,—What have the discoveries made by anatomists, chemists, or of persons engaged in any other branch of study, done to promote the success of the practice of medicine ? To this question the answer may with truth be given,—scarcely any thing. It is true, that chemistry has added a long list of articles to the *materia medica*, and reduced the volume or quantity to be used of many others. But this has added more to the extension of quakery, by facilitating their operations and pretensions, than it has added to true knowledge in the practice of curing the sick.

And it may be said with truth of the discoveries which have

been made in anatomy, that they never have, and never can add any useful knowledge to efforts to cure the sick, so long as practitioners of medicine and the people at large hold to their present opinions as to the nature of deranged action in the human system. Emetics, purgatives, sudorifics, diuretics, &c., were used, we presume, before any discovery was made by the anatomists to justify their use. And deranged states of action in the human system were looked upon as and called diseases from the first; and they are looked upon and called diseases now.

The marsh-miatic doctrine of Dr. CULLEN has caused some people to be fearful of the healthfulness of particular locations—has perhaps caused the inhabitants of some towns and cities to pave their streets more extensively than they otherwise would have done—and it has been the cause of many erroneous opinions and useless speculations: but if it has served to enlighten the judgment, or improve the mind of any one, as to the true nature and effects of deranged action in the system, or has been the cause of any improvement in the practice of the healing art, we are not aware of it.

In sober truth, if we will look at the evidence before us dispassionately, we must come to the mortifying conclusion, that the practice of medicine by the members of the allopathic school has not been for ages past in a more deplorable condition than it is at the present time, either as regards the relief it gives the afflicted, when put in comparison with what is called homeopathy or hydropathy, or as regards the confidence it inspires in the minds of the people at large.

Nor are the members of the faculty unaware of this state of things, as is evidenced by the efforts some of them are making to alter it. But, unfortunately, their efforts are being made in the wrong direction, as the evil does not lie in the adulteration of medicines, nor in the imperfect education of the members of the school in the principles taught, but in the erroneous foundation upon which their theory of the nature of "disease" is based, and in their equally erroneous views as to the effects of medicines upon what are termed "diseases."

When we see thousands of vultures hovering over a field where a battle has been lately fought, we may rationally suppose that bodies of the dead are there; so, when we see thousands of itinerant quacks travelling over the country with their specifics, and that the people are anxious to buy them, and when we see the shelves of the apothecaries' shops bending beneath the weight of these nostrums, and every newspaper of the day literally filled with advertisements of these newly-discovered and infallible remedies for every disease to which the human system is liable, what are we to conclude as to the state of public opinion, in regard to its confidence in the members of the allopathic school, but that they possess at best a doubtful popularity? This would not have been the case at the present day if truth had been taught in schools of medicine; if common-sense had guided the conversation, and true philosophy dictated the prescriptions of physicians for the last fifty years.

The temple of science has not yet been raised so high, nor have its foundations been laid so deep, but that each individual may approach it, and judge for himself of the materials of which it has been built, and see if these be harmony, beauty, and truth. In doing so, let us lay aside all hypothetical views and notions formed before the sciences had unfolded the great volume of nature's laws, and let us draw our deductions from the undeniable truths there laid before us by the researches of the anatomist, the chemist, and other evidences of true philosophy.

From the anatomist we learn that the human body is beautifully and wonderfully constructed of distinct but mutually dependent systems of organs. The brain and its dependencies for sensation, vitality, &c. The heart and its dependencies for circulation, secretion, excretion, &c. The lungs to act upon the air of the atmosphere, to decarbonize the blood, to give it oxygen, heat, &c. The stomach and its appendages for the digestion of food, its assimilation, &c. The muscles and bones for motion, support, &c.

From the chemist we learn that the atmospheric air is composed of two gases, oxygen and nitrogen, in its pure state, and

that all other aëriform gaseous matters mixed with it are foreign to it ; and we are taught, also, that it is a uniform law of nature that wherever any body, whether it be gaseous, liquid, or solid, is made to occupy less space than it did before, whether from chemical action or from compression, heat is given out to the surrounding bodies, &c.

It is not necessary here to enter into even a partial description of these several organs or of their respective functions ; but to understand what life and healthful action in the human system are, it is indispensably necessary to know that the organs perform their functions regularly and harmoniously, so long as the exciting or stimulating causes of their actions are supplied in due proportion to the excitability, or power of being acted upon, which is in them at the time.

From this we see that action in an organized body, produced by its innate laws, is life ; that health is the perfection of that action, and that deranged action in organized living matter (disease) is always the effect of some violation of these laws of life and health.

We shall now proceed to state the laws and their effects which produce life and healthful action in the human system—how they are violated, and the effects of such violation ; and also, how, *agreeably to these laws*, healthful action is to be restored in the organs of the system after it has been deranged.

And in doing so the author will promise upon his honor, as a man and upon his hopes of future happiness, that he will state nothing but what he knows to be true, nor will he state any thing as a law of the animal economy but what experience and the investigations of science corroborate.

And he will say to all who may honor these pages with a careful perusal, that if they will carry into practice the laws of life and of healthful action as therein explained, they will enjoy, as he has done, and is now doing, the blessing of a healthy old age.

THE

THEORY AND PRACTICE OF MEDICINE.

CHAPTER I.

ON LIFE, ON DEATH, AND ON WHAT CONSTITUTES HEALTHFUL ACTION IN THE HUMAN BODY, WITH OCCASIONAL REMARKS UPON DR. WM. CULLEN'S NOSOLOGY OF DISEASES, AND HIS GENERAL TEACHINGS ON MEDICINE, WHICH ARE THE GROUNDWORK OF THE PRESENT ALLOPATHIC SYSTEM OF MEDICINE.

It is a somewhat remarkable fact that, whilst there have been thousands of volumes written and published to the world to prove that some hundred or more diseases, which have distinctive names, powers, attributes and characteristics, may attack the human body and destroy its life, and whilst there is plenty of advice given in these volumes as to the best means to be used to destroy those diseases, yet there is but little if any thing said as to the nature of the life that may be destroyed, and which is the great object to be saved. But perhaps it is best that it is so; for if there had been as much error taught the people, as to the nature of life, as there has been as to the nature of what are called diseases, the task of clearing away the errors of both would have been indeed an herculean one.

It must, we think, be admitted as a good rule, that before we

can with perfect propriety attempt to prevent or to change any coming effect of nature's laws, we should not only endeavor to understand the nature of such effect, but we should also endeavor to comprehend the laws of nature by which the effect, if not prevented, will be brought about.

If this rule be a good one, then it follows that before any person can with propriety attempt to prescribe medicine for one who is sick, or in whose system action is deranged from the healthful standard, and in whom sickness or deranged action is tending to the destruction of life, (death,) such person is in duty bound (or he may assist in taking life) to make himself acquainted, as far as possible, not only with the effects of the remedy he is about to prescribe, but also with—what life in the body is—what constitutes healthful action—how far the existing action has deviated from the healthful standard—and the tendency of that deranged action to the destruction of life in the body of the patient. If we do not know what life in the body is, how are we to understand what are the best means of promoting its continuance? If we do not know what constitutes healthy action in the system, how are we to know how to restore it after it has become deranged? or even know when it has been restored? And if we do not know how far the deranged action in a patient's system deviates from the healthy standard, and its tendency to the destruction of life, how are we to know how to proportion the means to the end in view—viz., the restoration of healthful action, and the preservation of life?

We shall hereafter endeavor to show that, by not attending to these plain rules, the members of the allopathic schools of medicine (as far as their influence extends) have led the people's minds into such a state of doubt and distrust of opinion at the present day, that there is but little confidence felt by them in the allopathic or any other system of practice that is now being presented to them.

Here the author will candidly declare that it is not his design or wish to say any thing of that ancient and honorable school but what is intended as an effort to induce its members to look more

to the developments which have been made in the course of the last half century, and are now being made almost daily, by the votaries of science in the laws of nature, which govern both living and dead matter, and less to the opinions of those who thought and wrote before the uses of all the most material organs of the system were known, and long before the laws which govern matter and motion were understood as at the present day; as he fully believes that all past as well as all future improvements in the healing art, were and must continue to be the results of scientific developments, rather than of the opinions of the ancients newly brought forward, or of any accidental discovery of specifics or panaceas which are to cure the afflicted by some unknown or specific power or virtue, as it seems is now expected of cod-liver oil, &c., &c.

Let us then endeavor to trace out the above inquiries as to what life in an organized body is? what death in such a body is? what constitutes healthful action in the human system? what causes healthful action to become deranged? and why deranged action tends to the destruction of life, as far as the lights of science afforded at the present day will permit us to go, or assist us in going: that we may then see, how far ignorance and prejudice have led us astray from the truth, and how we may retrace our steps.

To an uninformed mind, that views a human body which has just been deprived of life by a simple wound, by concussion of some of its organs, or by a lesion of some of its blood-vessels, it may seem as if life had quitted the body by the exercise of its own will; but to the mind of a more intelligent observer it must appear evident that the life of that body was an effect, and that that effect was the consequence of external and internal exciting causes, acting upon an inherent principle in the body, producing development or action in the organization of that body; and that the destruction of life, or death in that body, was the consequence of either the withdrawal of the external and internal exciting causes of action above alluded to, or of the destruction of the inherent principle of excitability, or power of being

acted upon, connected with and dependent upon organization; and that in either way action is destroyed, and action destroyed is death in the body.

It is at least a pleasing if not a curious fact that, as science advances in explanation of the laws of nature, it more and more develops the beauties and truths of Holy Writ; for, until science had made known to men the compound nature of the air they breathe—and that one of the component parts of the air breathed is oxygen gas, which taken into the blood gives off heat; and that heat acting upon the excitability of the heart and arteries as a stimulant, gives to them motion, which being continued is action, and action is life—we could form no satisfactory idea as to what is meant to be conveyed by the following beautiful passage from Holy Writ, delivered by Moses, the great Jewish lawgiver:—“And the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.” From the time at which this passage was delivered by Moses down to within a few years past, it must of necessity have conveyed a very doubtful meaning, because the nature of atmospheric air was not understood; nor were the real uses of the lungs in the animal economy known or suspected. And even up to about the year 1789, at which time Dr. WM. CULLEN was Professor of the Institutes and Practice of Medicine in the then world-renowned College of Edinburgh, there was nothing known of the compound nature of atmospheric air; consequently, he and his immediate followers knew nothing of the functions of these important organs in carrying on the operations of life. This fact is made still more certain by the learned Professor's translation from the German, and publication of HALLER's Physiology, in which all that was then known upon these important subjects was set forth. And Dr. CULLEN about the same time published his own “Methodical Nosology; or, Arrangement of Diseases according to their Genera and Species,” (as he tells us himself,) founded upon observation alone, abstracted from all reasoning, which was followed by his “First Lines on the Practice of Physic,” in which he brought forward his views of

the nature and effects upon the human system of marsh miasma, contagion, &c. ; of their being taken into the stomach with the saliva, and there acting as fomenta to produce those phenomena of nature called fevers. And then follows his minute description of each of these phenomena, under the title of disease—its peculiar phenomena, its powers, critical days, length of duration, &c. ; and lastly, his prescription, or remedy for each particular disease, which was recommended upon the grounds of experience alone. The learned professor thus establishes for future generations a complete system of medicine of both theory and practice, which, unfortunately for the people of the world and the progress of medical science, has been followed with singular fidelity by the allopathic schools up to the present day, in defiance of all the discoveries which have been made of the nature of atmospheric air in the uses of the lungs, &c., since he wrote.

In the opinion of Dr. CULLEN, marsh miasma is a poison which, being taken into the stomach, becomes the remote cause of future disease ; and the immediately producing causes, such as cold, fear, &c., excite it into action at once, whilst the *vis medicatrix naturæ*, (a hidden power, which he supposed always existed in the system,) gives to the disease its location, symptoms, &c. ; and these determine the name to be given to it, and the name determines the remedies to be used to assist the hidden power—the *vis medicatrix naturæ*—in expelling it from the system. Hence we find such expressions as the following, used by the learned Dr. and his followers in their writings on this subject :—" This disease is attended by," " for this disease," &c., and in this way giving to the minds of their readers the impression that what they are reading about is a fixed fact, a something, a reality ; and discovered, as before remarked by him, " by observation alone, abstracted from all reasoning." Here we will ask the members of the allopathic school of medicine the following question, and beg for it a serious consideration : " After such teachings for the last sixty years, have they any just right to blame the people at large for the opinions they have formed of the nature of diseases, and for their giving their money for nos-

trums and specifics to drive diseases out of their bodies? The writer of these remarks can never forget the unbounded confidence with which he received this apparently plausible, but wholly delusive theory, the length of time he held to it, and the many proofs of its falsity which were required by his own mind before he could be induced to give it up.

It is a fact, which no one we believe will attempt to deny, that not a single improvement has been made, either in the theory or practice of the allopathic school of medicine, in consequence of the great discoveries in science above alluded to, although they have made much more evident what the true nature of life in the body is—what death is—and what healthful action in the body is—than all the discoveries in science put together which had been made before 1789. We do not mean to say that there have been no improvements made in the art of compounding medicines, or that the condition of the sick has not been somewhat ameliorated, but that there have been no improvements made which were based upon those great discoveries. And the awful responsibility now rests upon the members of that school, both to their God and to their fellow-creatures, for their not having done so. It has been left to an ignorant shoemaker of Germany to discover, and to bring into practice successfully, the greatest remedial agent in nature, the application of cold, against deranged action in the human system; and which, in ninety-nine cases out of every hundred of what are called fevers, will give relief, if properly applied. And, although this energetic discoverer is, as we suppose, ignorant of the laws of the animal economy by which his remedy cures diseases, (to use the language of the day,) yet, so true is his remedy to the removal of the cause of deranged action, and so forcible is truth, that he goes on doing good in defiance of opposition from members of the allopathic school, and gives relief in thousands of instances where their remedies have previously failed.

But let us proceed with the consideration of what life in the body is. The word stimulant, and the effects of stimuli upon an organized living body, are easily understood, because the effects

of stimuli, when applied to living matter, become obvious to our senses ; and the least reflection must satisfy our mind that these effects do not result from the simple fact that the body to which the stimulus has been applied is organized. We must therefore come to the conclusion, that the effects produced are caused by, and dependent upon, some excitable principle connected with organization.

To read then the extract before mentioned from Holy Writ understandingly, we have only to make such verbal additions to it as will make the sense compatible with the known laws of action or life in the human as well as all other living organized bodies, but which were not necessary to express the meaning intended to be conveyed by the inspired penman, which can be done without in the least affecting the meaning of the passage in any other way. Thus ; "And the Lord God formed man of the dust of the ground," and gave to that formation the power of being acted upon by stimuli (which power we shall hereafter express by the term "excitability," or the power of being acted upon), "and breathed into his nostrils the breath of life." Air or breath is a stimulant from the union of its oxygen with the carbon of the blood, and the consequent evolution of heat. This heat is the vital heat of the system, which is the great stimulant of the excitability, or power of being acted upon in the system, and produces action in the lungs, bloodvessels, and heart ; and, as we have before said, action in an organized body is life. Consequently, "man became a living soul."

We must plainly see, from this passage from Holy Writ, and from the discoveries which have recently been made in science, that life in an organized body is an effect which results from stimuli acting upon an inherent principle implanted by its Creator in its organization. And experience has abundantly shown, that this principle of excitability, or power of being acted upon, may be increased, diminished, or wholly destroyed, by the quantity of stimuli acting upon it ; the quantity of excitability being always in an inverse proportion to the amount of stimuli which has just been acting upon it.

From the above proofs we think it must be evident to every one that healthful action in the organs of the body must be just such, in force and frequency, as to produce the full and perfect development of all of its parts, their absorption when necessary, and their reproduction. And it must be equally evident to them that, inasmuch as both the stimuli which acts upon the excitability of the system, as well as the excitability itself, may and often do vary, both in their quantity and in their relative proportions to each other, the organization must be liable to states of action which deviate more or less from that healthful standard, and which are incompatible with the full and proper development of the organs of the system. This deviation of action is what is called disease; and the withdrawal of stimuli from, or the destruction of the excitability in the system, so that action ceases in it, or any part of it, is death to the whole, or to the part.

If we will examine into the causes of life in all the different forms in which it has been excited by the laws of the Creator—whether in that of man, beast, bird, reptile, or insect; or in that of the vegetable creation, in a tree or a flower—we shall find that however much they differ in size, in form, in internal or external organizations, in habits of life, &c.; and although they increase in complexity of organization and become more and more under the influence of mental action, and the wants arising therefrom—the same principle of excitability, or power of being acted upon by stimuli, is implanted in the organization of all. And also that those influences, matters and things which have been ordained to act upon that excitability, or power of being acted upon, as stimulants or excitants to action or life, must continue to act as such; or else, action or life in the organization will cease. And in all, as before remarked, a cessation of action is death.

From the above it must be evident, we think, that life in an organized body can be destroyed in but three ways: First, by the destruction of the organization itself, so that its excitability or power of being acted upon by stimuli can no longer be produced; this is caused by violence, &c. Secondly, by withholding

stimuli to such an extent that action or life can no longer be carried on in the organization ; as when a person or thing starves, or freezes to death. And Thirdly, by the destruction of the excitability, or power of being acted upon in the whole or a part of the organization, by the excessive application or accumulation of stimuli to or in the organization. This is the cause of death, in the first instance, by the application of great heat, where the organization is not destroyed ; by poisons, &c. ; by the sudden destruction of the excitability, or power of being acted upon in the organization ; and by inflammations, and what are called fevers. In the second instance, by the accumulation of the stimulus of heat in the organization, which, though more slowly, equally in the end, if not stopped, destroys the excitability of the organization, and in this way produces death.

The flesh and blood of all animals, and particularly of the human species, when exposed to a moderate degree of heat, and life or action has ceased or is greatly weakened, are liable to chemical changes which break down their organization. These changes by the schools of medicine are called *gangrene* and *mortification* ; but, in truth, they are fermentation and putrefaction. These rather mysterious expressions, with many other things, have served to keep up the delusion under which the public mind labors as to the true nature of diseases, their proper means of cure, &c.

Action in an organized body, we have now endeavored to show, is the life of that body, and that that action or life must be kept up by the application of stimuli, to a certain extent, in force and frequency, to resist the laws of chemical affinities, or fermentation and putrefaction in the organization will follow. And we have also endeavored to show, that if action or life is forced too much, and kept up for a length of time by the application or by the acquisition of too much stimuli, (as of heat in fevers, &c.,) then the inherent excitability, or power of being acted upon in the organization by stimuli, will be destroyed, and the action from that cause will fall below the point of resistance to the laws of chemical affinities, and fermentation and putrefaction will follow.

These apparently simple but highly important facts should never be lost sight of by any one who undertakes the practice of the healing art, for it must readily be perceived that the lives of those in whose systems action has become deranged, depend more upon the extent to which the derangement has gone, or may go, than upon the name which is given to the derangement, or disease, as it is called. In proof of this we will state, that a case of remitting fever, in which the derangement of action in the system is great, causes more danger to life, and in proportion requires more knowledge in the practitioner to remove it, than would be required a mild case of yellow fever, or small-pox, in which the action in the system deviates but little from the healthful standard, although the names of yellow fever and small-pox strike terror into the hearts of almost all who hear them. And so likewise will the scratch of a pin on the finger, in some states of the system, produce more danger to life than a musket-ball passing through the body in some others.

This is the cause of the errors under which the members of the medical schools now labor, and of their leading the minds of the people astray on the subject, and which prevents that advancement in knowledge in the healing art as a science so much to be wished for. And the author will say here, without fear of truthful contradiction, that if a man could make himself acquainted with all the names that have ever been given to deranged action in the human system, under the title of diseases, and could learn all the medical qualities and properties of all the vegetable and mineral substances and fluids upon the earth, he would not yet know when to administer one of them to relieve his fellow-creatures of the deranged action, or disease, under which their system labored, unless the nature and extent of that deranged action were properly understood and appreciated by him. And he will say, with equal confidence, that this knowledge can never be gained without first having gained a thorough knowledge of that unerring guide placed by Almighty wisdom and goodness so conspicuously to the sight, and so easily felt by the touch, in the temples, neck and wrists of every living soul—the pulse. The

pulse ! What is meant by the term, the *pulse* ? It is the object of the author of this work to try to inform others of the laws of nature which govern in the human body, by endeavoring to convey to their minds the results of his own experience and observation, guided by the best lights he could obtain for the last forty years ; to prevent as far as possible the sufferings and deaths which occur from a lack of knowledge of those laws, and which is easily acquired where there is a sincere desire to do so ; and when the fact is distinctly understood, as we have before endeavored to show, that action in an organized body, produced and kept up by stimuli acting upon its innate excitability, or power of being acted upon, is the life of that body ; and that, upon the equable force of that action, not only the health of the body, but life itself depends. To make the foregoing and following observations as plain as possible, we will introduce here the subject of the pulse ; at least, so far as to give a general knowledge of what the pulse is, and its indications in the economy of life.

We believe there are but few persons, who have arrived at maturity of life, who do not know that the pulse is caused, in some way, by the power of the heart in giving circulation to the blood in the body ; but there are some persons, and some too who have professed to study anatomy, who believe that the pulse is caused wholly by the contractile power of the heart, and that the arteries are mere channels or tubes through which the blood is carried to all parts of the system. We must take the liberty here of saying, that this is an error of opinion, which will be easily corrected by simply reflecting that if this were true, there could be no correct opinion formed, by feeling the pulse, of the force with which the blood moves along the different arteries, because that force must necessarily diminish as the blood advances further and further from the heart, the only seat of power, which is not the case, the momentum of the blood throughout the whole length of the artery being the same, only differing as the artery becomes smaller in diameter and thinner in its coats. To form a correct opinion on this important subject, we must look upon the heart and the arteries as forming one organ ; and that, with what-

ever force a jet or wave of blood starts, that force is continued in proportion to the size and thickness of the coats of the artery.

This being the case, the pulse, whether on the temple, neck, or wrist, is equally good evidence of the force and frequency of action in the whole system. Consequently, when we find action in the artery either too strong or too weak at either of these points, we may be sure that it is so in all parts of the system, unless there is some local cause to prevent it.

The pulse is that throbbing sensation felt in all the arteries, and particularly in those of the temples, wrists, and neck, of every living soul; and is at all times a sure indication of the state of action going on in the whole system. Kind it was indeed in the Great and Wise Author of our existence to place this unerring evidence of the state of action going on in our systems in those conspicuous places, where it can be immediately appealed to both by ourselves and our friends, to ascertain if there be any deviation of action in our systems from the healthful standard; and if any, how much.

But this safe guide, like many other dispensations of a kind Providence, is at the present day almost entirely overlooked, from the fact that the people, as well as many who profess to practice the healing art, have been taught to look upon derangements of action in the human system as individual somethings, as diseases (as they are called) which have the power to produce their own symptoms and effects, and their own states of the pulse, &c., instead of understanding the state of the pulse as showing the state of the derangement of action going on in the system, and that such derangement is the disease itself, which can only be brought back again to the healthful standard, or *cured*, as it is called in the language of the day, understandingly, by a proper knowledge of the pulse.

If we wish to become acquainted with the true nature of the pulse, we must not be satisfied with simply knowing when it beats too fast, or too slow, too strong, or too weak, &c., but we must make ourselves acquainted with the circulation of the blood through the system, and with the things which act upon the sys-

tem both externally and internally. This is much more easily done than is supposed, after we have formed a proper opinion in our minds as to what life in the body is.

As we wish to mention all the subjects necessary to be known for the relief of deranged action in the system, commonly understood by the expression,—“The cure of disease,” in their proper order, as near as possible, we will here quit the subject of the pulse for the present, as it will be frequently adverted to hereafter, after mentioning a fact in connection with it, which, we think, is well calculated to impress on the reader’s mind the great importance of a proper knowledge of the pulse to enable us to give relief to the sick; and of the danger there is in what seems to be a simple remedy for what also seems to be a slight case of disease. The apparently simple remedy of “a warm bath for the feet at bedtime” is often prescribed for what is called a bad cold, &c. But we will venture the assertion, and we appeal to the experience of our readers to prove the truth of it, that scarcely any person ever used this remedy (as simple as it is thought to be) who was not considerably better or worse the next morning. And the experience of every person must have shown him that the results from the use of this remedy have been very different upon different persons; and also upon the same person at different times.

In some cases (as it is often said), it acts like a charm, the patient readily going into a free perspiration, sleeping easily, and waking up invigorated and refreshed. Whilst, on the other hand, when used upon others, and, in some cases, upon the same person at different times, it produces restlessness, a hot and dry skin, headache, &c. In fact, its effects are just the reverse of what they were before. The remedy in these cases is the same, and the name of the disease the same, but the effects produced are just the reverse of each other. Now, it must be evident, we think, that there was some cause for these different results; and it is the cause which we wish our readers to understand, by learning the different indications of the pulse.

Unfortunately for the sick, there has been heretofore and is now a disposition in the people to believe, and in the members of the

medical faculty to strengthen the belief, that if a sick person becomes worse after the use of a remedy, (and particularly such a remedy as the above,) such increase of sickness is the effect of the innate power of the disease. Hence, it is said, "The disease is violent, or malignant, or insidious," &c., thus conveying the idea to the mind, that the disease is an individual something which has power, will, &c. This idea of individuality, with the attributes of power, will, malignity, insidiousness, &c., being established in the mind as to the nature of diseases, and to each disease a significant name having been given, the conclusion follows naturally enough that this willful, malignant and insidious thing called "a disease" has to be driven from the system by remedies. And it is hard to understand how simply "bathing the feet in warm water on going to bed," can add to its malignity, power, &c. But this remedy is like all others which either stimulate or depress the action in the system, and it must have the one or the other of these effects. Consequently, if the pulse of the patient is not in the right state for it to do good, it will surely do harm, and in proportion as the pulse is stronger and harder than the healthful standard.

We do not intend that these remarks should be confined to the single remedy of bathing the feet in warm water, for they are equally applicable to all others which have the effects of increasing the heat of the system, and of exciting quicker and stronger action in the pulse—such as heated rooms, increased quantity of bedclothes, warm drinks, stimulating medicines, &c.

To those persons who do not understand the causes and the indications of the pulse it may seem impossible that such apparently simple remedies can produce such serious consequences to the sick, but we feel justified in saying that if all cases of deranged action (called diseases), which would otherwise have been slight, but were made dangerous to life, and perhaps did destroy it, by the use of such apparently simple remedies, could have been made known, thousands who gave their advice freely would have stood appalled at the consequences of what they had done. And we feel it right to say also that, by our experience

for forty years, by our knowledge of the anatomy of the human body, and of the causes of action in it, and also by our knowledge of the pulse theoretically and practically, no person, even if he be a graduate of the medical schools, should venture to prescribe one of these so-called simple remedies, without first making himself acquainted with the then state of the patient's pulse, and being satisfied that it is in the proper condition ; that is, neither too strong nor too hard for the use of such remedy : for if he does, he may be the cause of all the violence, malignity, and insidiousness of the so-called disease.

The author would not mention these things in this open and candid manner if he did not know them to be true, and if he did not know also that it is much easier, than the people have heretofore been taught to believe, for any one, who will give to the subject a little attention, to make himself acquainted with the true nature of the pulse, with the causes of deranged action in the system called disease, and with the causes why the remedies above spoken of, although called simple, produce increased derangement of action in the system, or disease, when the pulse is not in the proper condition for their use, and also why they do give relief when the pulse is in the proper state. And the writer flatters himself with the confident belief that all persons who will honor these pages with an attentive perusal, will not only be prepared to ward off what are called diseases in a great measure from themselves, but will be better prepared to fulfill one of the strongest injunctions in Holy Writ : To do good to others. And he candidly declares that, to give this information, in order that his fellow-creatures may be benefited by it, is his whole object.

We have stated that action in an organized body, produced by stimuli acting upon its inherent excitability, is life ; and that healthful action is that amount or force of action which produces the perfect development of the whole organization. Any amount of action then which rises above the healthful standard, or falls below it, is deranged or diseased action. In all diseases, as they are called, from a simple boil to consumption ; or from toothache to the most violent rheumatism, &c., the pulse is in the one or the

other of these conditions. To cure diseases then is to bring the pulse, and keep it to the healthful standard. If any person has ever been diseased whose pulse was still at the healthy standard; or, if any person was ever cured of any disease until his pulse was brought to and remained at that standard, there has been what the writer never saw, and what he believes nobody has ever seen. And he will say still further that no person ever saw a disease of any kind, from which the patient did not recover, where the pulse was brought to the healthful standard and kept there for a length of time, as far as the powers of nature can go in restoring the deranged or lost organization. All remedies which act upon the solids or fluids of the body, whether called mild or violent, do so through the medium of the pulse; because all secretions, absorptions and excretions, depend upon the state of the pulse at the time. We must clearly perceive, therefore, that, when the system is already laboring under disease, and the pulse is in an unhealthy state of action, any remedy which has the effect of forcing the pulse into a more unhealthy state will make the disease (as it is called) worse. What then, we will ask of the candid reader, should be the aim of those who undertake to prescribe for the sick? to bring the action of the pulse of the patient back to the healthy standard and to retain it there, as the sure and only way of curing the disease. But unfortunately for the afflicted, neither the people nor those who have made the practice of medicine their profession, have been so taught; but, on the contrary, have been induced to believe that diseases are realities, or material somethings, having power, will, &c., which have to be destroyed, or in some way driven out of the system by the agency of the remedy used. Hence the world has been ransacked in all the departments of nature for agents to produce that effect. And hence also the people are now being cheated of their health and their money by pretended discoveries of these agents.

Before we enter upon any description of the most important stimulants which act upon the excitability, or power of being acted upon, in the organs of the system, and thereby excite action

in them, we will give a short description of some of these organs, their uses, &c., and then treat of the principal stimulants or excitants which produce action in them. Upon even a superficial view of the human form, the mind of the intelligent beholder must be forcibly impressed with the beauty and majesty of its appearance, with its power of locomotion, with the perfect adaptation of each particular part to the duties required of it, and with their united ability to do and to acquire whatever even the mind can rationally require of them. And if the observer will carry his investigations into the internal organization of the body, he will find there abundant evidence of the great goodness, power and wisdom of an allwise Creator, in the construction of the organs of the body, and of the care which has been taken so to place and guard them, that, whilst each is sure in the performance of its duties, it is safe from all ordinary causes of harm from others.

He will find the brain (perhaps the most important organ of the system) surrounded by a wall of bone, not exactly solid, but so divided into plates and united by sutures, as to give it a safer protection than a solid wall would give. The heart he will find is defended by a strong plate of bone in front, and by the ribs on two sides, whilst it is inclosed in a strong muscular sack, thus completely incasing and guarding it from all harm or interruption from without or within. And the lungs—no one, we think can view these organs, the wonderful contrivances by which they act, and the perfect protection given them, without being strongly impressed with a deep sense of gratitude toward the allwise Creator for this evidence of his care for his creatures; for not only are the lungs guarded from all ordinary causes of harm, but they are assisted in the performance of their indispensable duties by the ribs, diaphragm, &c., so that those duties are performed with ease and certainty. The stomach he will find so placed, and surrounded by soft and yielding organs, such as the liver, spleen, diaphragm, intestines, &c., that its important office of digestion will certainly go on with ease if supplied with food with moderate care. And then he will find the framework of bone for

support and motion beautifully covered with the muscles to give that motion. Thus, he will find these divisions of the one great whole to make a perfect system: the brain and its appendages for supplying the system with excitability, or the power of being acted upon by stimuli, with will, with sensation, intellect, &c.: the stomach and its appendages, for supplying by digestion and assimilation nourishment to all the organs of the system: the heart and its appendages, for circulation, secretion, absorption and excretion, to receive and to carry out of the system every thing which appertains to it: the lungs and their appurtenances, for decarbonization, oxydation, calorification, &c., by which the blood of the whole system, and the chyle furnished from the food by the stomach, lacteals, &c., are purified, warmed, and prepared for nourishing the whole: the liver too is a very important organ in the economy of life. But, heretofore, as with the uses of the lungs, owing to the lack of progress in the sciences, the extent and true character of the duties performed by this organ could not be correctly understood. Heretofore the only duty assigned to it by physiologists has been that of secreting bile to promote digestion, and to clear the intestines of useless matter. But we feel satisfied that, since science has arrived at its present state of perfection, a little reflection, aided by some knowledge of comparative anatomy, must convince every reflecting mind that the liver has other important duties to perform besides those of simply aiding digestion, &c., and that these duties are subordinate to and assistants of the more vital organs.

The liver is one of the largest and most insensible organs of the human system (particularly when in a healthy state), and, as we believe, should be looked upon as an auxiliary or assisting organ of the lungs, stomach and heart; or, to speak metaphorically, as a kind of kitchen to the heart, stomach and lungs. Our reasons for this belief will be explained as we go on defining its uses.

There are some curious as well as instructive facts, disclosed by examining the organs of different orders of animals, which throw much light upon the uses of the liver in the animal econo-

my. In the first place, we have good reasons for supposing, from comparative anatomy, that amphibious animals,—that is, animals which live both in air and under the water, have livers proportioned in size to the time they are required to live under water. The longer that time is, the larger their livers are; and the smaller their lungs. And we learn from the anatomy of the human fetus, that the liver is one of the first organs developed in the body, and in secreting carbonaceous matter from the blood before the birth of the child, whilst the lungs remain perfectly inactive until afterwards.

These facts, in our opinion, go a great way in proving that the blood can be more or less decarbonized by the liver, by the secretion of bile; and that the liver can, and often does—when the air breathed is impure, or otherwise in an improper condition for breathing, such as being greatly rarefied by heat, &c.,—act as an auxiliary to the lungs in the performance of this indispensable duty.

The truth of this opinion is still further proved, we think, by the fact that all derangements of action in the system, called diseases, in which the liver is implicated, and an increased secretion of bile gives relief, (such as are called bilious fevers,) come on when the air of the atmosphere is in an impure state, or otherwise in an improper condition for the perfect decarbonization of the blood by the lungs; and that such derangements of action, or diseases, are relieved by the spontaneous secretion of bile, or by such secretion being caused by the use of medicines. Here we find a perfect agreement between the theory advanced above of the uses of the liver in the animal economy, and the object in view by the use of such medicines as calomel, &c., which have been discovered by long experience.

And the fact also of persons going from cold climates to warm being more subject to these states of deranged action (called bilious fevers) than those who were born or had resided in them a long time; and their becoming habituated to such climates (what is understood by the term “acclimated”), all goes to prove the physiological truth that the liver does assist the lungs in decarbonizing the blood.

The bile, when secreted by the liver in a healthy state and in proper quantity, greatly facilitates the actions of the stomach and intestines on the food taken into them, by preventing its tendency to putrefaction, &c., and thus assists in the preparation of the chyle to be taken up by the absorbents and carried into the blood ; and when the matters in the stomach or intestines become offensive to them from any cause, a greater quantity of bile is secreted by the liver, which acts as a purgative upon these organs, and relieves them of the offending matters.

The liver, from its great size and insensibility in a healthy state, and the spleen, are capable of being more or less distended with blood without injury to their organic structure ; hence, they give relief to the more vital organs when greatly exciting causes act suddenly, or for a length of time upon the system, and give increased force and velocity to the circulation of the blood. Whereas, if the brain, lungs, or heart, were compelled to receive these great influxes of blood, fatal consequences must follow.

This subject will be alluded to again, with a more minute description of the arrangement of some of the blood-vessels of the liver and its associated organs, and their influence upon healthy action in the system, after some other subjects have been treated of which require more immediate attention.

After thus viewing the human form, and witnessing the evidences of the great goodness and care bestowed upon the whole organism of the system by the Almighty Creator, it seems almost impossible that a rational mind could come to the conclusion that this same good and wise Creator, who had thus guarded it, should decree that it should be afflicted by some hundred or more diseases, which are to produce pain and suffering, and in the end its destruction by death, before it arrived at the end of its allotted time upon the earth. Here the author will take the liberty of expressing it as his decided opinion that there are no other studies in which the human mind can be engaged which are so well calculated to raise its thoughts with awe and gratitude toward the Author of all Good as those of anatomy and physiology (but

they certainly have not had that effect heretofore in the opinion of many, as the members of the medical profession are almost proverbial for their infidelity in belief), if they could be prosecuted before the preconceived opinion was fixed in the mind of the student, that the Great Author who spoke the human body into existence had ordained it to be subject to special diseases causing pain, suffering, and death, which are to come upon the infant as well as the adult, upon the good as well as the bad, by the special command of the same power which gave it form and life. For when the student has witnessed for himself the above-mentioned evidences of the Creator's care and goodness in guarding the organs of the body—has studied the laws of the animal economy, and has learned how easy it is for those laws to be violated, either by ignorance or design, and the consequences of such violation in the derangement of action which must follow, he then begins to have some ideas of the truth, and his heart begins to be filled with love and gratitude toward his Creator for these evidences of his goodness. But now his previous opinions, derived from education and habits of thought, stand in the way of full conviction, and doubts arise in his mind. It is at this point that the feelings of the student first begin to revolt against his former opinions, and some will go on doubting, whilst many will prefer denying the direct agency of the first great cause altogether, rather than disbelieve in his goodness and justice. But, in the opinion of the author, there is no necessity for a disbelief of the one, or a denial of the other. The Allwise determined to create man. Man, to be an intelligent and self-moving body, must have an organism of the most complicated structure; and to keep that structure in the constant exercise of its functions, it must be operated upon by internal and external agents, which must be governed by laws; and any violation of these laws must produce effects, and these effects must have consequences attending them, some of which are called diseases.

It was not our intention to enter upon any further description of the organs of the system, than simply to show how perfect they are in construction, and how safe they are, by guards and

position, from all causes of harm, so that they will certainly perform the duties required of them, if their inherent excitability (as before mentioned) is not destroyed by over exertion, and they are supplied with the proper materials on which to act. To explain what those duties are : The stomach and its auxiliary organ are to receive the food, and to prepare from it the nourishment of the whole system. The heart and its auxiliary organs circulate, secrete, absorb and excrete all the matters of the system. The lungs and their auxiliaries decarbonize, oxydize, purify, and warm, not only the chyle, but the whole of the blood, as it becomes impure and cooled by going the round of the circulation. Here we wish to impress upon the memories of our readers the important fact that the organs of the system can create nothing. They only act upon and prepare such things as are presented to them through the stomach and lungs. For instance, if there is no lime in the food taken into the stomach, there can be no bony matter formed for the support of the body. Nor can the lungs decarbonize, oxydize, purify and warm the blood, but in proportion to the quantity of oxygen in the air breathed. The liver and its auxiliaries assist the other organs in the performance of their duties by the secretion of larger or smaller quantities of bile, and the brain and its auxiliaries generate the excitability of the organs of the system, their sensibility and powers of perception ; it thinks for all, and acts for all, and makes life a blessing.

These things plainly show that every child born in a healthy state should live the allotted time of man's sojourn on earth, if it only received such food to eat, and such air to breathe, as its stomach and lungs require, and if the temperature of its blood could be kept at the healthy standard ; but unfortunately for the people, they have never been taught the laws by which life is sustained, and one half of the children born in a healthy state die before they reach the full development of their bodies.

From the above facts, we must not only perceive that life, or action in the system, is governed by laws, but that each organ has its respective duties to perform under those laws, although,

so regardful of life is its Great Author, that, where from natural causes the individual organ cannot perform perfectly the duty required of it, it may be assisted by some others. And we have stated above, that, if the body is treated as the laws of its organs require, they will surely continue to perform the duties required of them the allotted time of man's sojourn upon the earth.

If these things be so, how vastly important it becomes that every man should make himself acquainted with the laws by which life, healthful action, and what is called disease, are governed in his system ; and this not only for himself, but that he may exercise charity toward others.

If action in the system is life, and that action is caused by stimuli acting upon the inherent excitability of its organs, and if healthful action in the organs of the system is a certain amount or force of action—which we think no one will deny—then deranged action, or what is called disease, can be but of two kinds, viz., too high action, caused by too much stimuli acting upon the innate excitability of the organs of the system, or too low action, caused by too little stimuli acting upon that excitability. It is true, that these two states of deranged action or disease, produce very different effects upon the organs of the system, but these effects (which are called diseases by the schools of medicine of the present day) generally give relief to the system by lessening the amount or force of action which is going on in its organs. For instance, the eruption which takes place in what is called the disease of small-pox, and of measles, &c., and the secretion of matter in a boil, or an abscess, is not the disease, but is an effect of it, which brings the deranged action, or disease, back to the healthful standard. And we will venture to say that no person ever saw either of these effects produced which did not bring the action in the heart and arteries nearer to the healthy standard.

By studying the circulation of the blood in the human system we learn the following facts. Within the substance of the heart are contained four cavities ; two of which are called auricles, and two ventricles. The auricle called the left, receives

the blood from the lungs and drives it into the left ventricle, which contracts and drives it into the great artery called the aorta, and this artery divides and subdivides until it carries the blood throughout the whole system into its several organs. Each organ then acts upon the blood for the purposes of nutrition, secretion, absorption, excretion, etc. This applies to all the organs of the system except the liver, which is supplied with blood for the formation of bile by the vein called the "vena porta," which takes the blood from the stomach, intestines, etc., which was carried into them by the aorta, and carries it to the liver for that purpose.

After the blood has been distributed in this way through the whole system by the ramifications of the aorta for the purposes above mentioned; it is received by the capillaries and small veins, which unite together, becoming larger and larger, until they form the great vein called the "vena cava," which empties it into the right auricle of the heart. This auricle forces it into the right ventricle, which drives it into the pulmonary artery, by which it is carried to and distributed to the air-cells of the lungs, where it is exposed to the action of atmospheric air. After which the blood is again taken up by the pulmonary veins and carried back by the great pulmonary vein to the left auricle of the heart whence it started.

By this we see that all warm-blooded animals have a double heart, and a double circulation, but in cold-blooded animals there is a single heart and a single circulation, showing beyond all doubt that all heat in the system is derived from the air, by the blood coming into contact with it, and being chemically operated upon by its oxygen.

The circulation of the blood from the right auricle of the heart to the right ventricle, thence through the pulmonary artery into the lungs, there distributed to the air-cells, and then taken up by the small veins, which, uniting into one, the great pulmonary vein, is carried to the left auricle of the heart, is called the short circulation. The left auricle now receives the blood and drives it into the left ventricle, which forces it into the aorta or

great artery, by which it is driven over the whole system, and from which it returns through the capillaries, small veins, and great "vena cava," to the right auricle of the heart, from which it first started. This is called the long circulation.

Between the auricles and ventricles of the heart, and between them and the great veins and arteries, as in all human contrivances, such as air-pumps, water-pumps, steam-engines, etc., to drive air, water and steam from one cavity to another, and to prevent its return, there are strong valves placed. This fact we beg our readers to bear in mind, as it has much to do with a proper understanding of the pulse, and the relief of deranged action in the system.

Connected with the circulation of the blood are three other important facts, to which we now invite the particular attention of our readers, and hope they may never be forgotten by them. We do not know of any writer on the practice of medicine or physiology who has mentioned them at all; but we know and hope that our readers will, after understanding them, know also, that no person, however long or attentively he may have studied the subject in other respects, can understand the true nature of deranged action in the system, or what is called disease, or understand the proper means of its removal, or cure, who has not made himself acquainted with these facts:

1st., That the blood receives all its heat by coming in contact with atmospheric air in the air-cells of the lungs and decomposing it, a portion of the carbon of the blood uniting with a portion of the oxygen of the air, forming carbonic acid gas, which passes out of the lungs at their next expiration, whilst another portion of the oxygen of the air unites with the iron of the blood, the union of both the carbon and the iron with the oxygen giving heat to the blood, which is its vital heat.

2d., That when the blood from the heart arrives at the extremities of the small arteries, and has to enter the capillaries and small veins, the contractile force of both the heart and the arteries being now exhausted, there is nothing left to stimulate its free entry into them, but the purity of the blood and the oxy-

gen which has united with its iron. If the blood is deficient in these two respects ; if it be driven, by the contractile power of the heart and arteries, in consequence of their being over stimulated, faster than it can be taken up by the capillaries and small veins ; or, if both these causes act together, causing the blood not to enter the capillaries and small veins as fast as it is driven on by the heart and arteries, the effect will be that the blood fills back in the arteries, and must produce a backward pressure upon the valve between the aorta and the left ventricle of the heart.

3d., The blood, from the above described causes, filling back in the arteries, and pressing backwards more and more upon the valve, must affect the pulse by making the artery first fuller and rounder, then harder, tenser, oppressed, depressed, and finally indistinct, which are the very kinds of pulse mentioned by writers on the practice of medicine as belonging to certain diseases, and which they think are brought about by the disease which has to be cured, instead of understanding that the state of the pulse is the disease itself, and that the knowledge of the causes of the state of the pulse points out the proper means to be used to give relief. These subjects will be treated of more particularly hereafter.

We will now make some statements of facts in the history of medicine which will be important to a better understanding of the subjects hereafter to be discussed.

The circulation of the blood in the human body was discovered by Dr. HARVEY about the beginning of the seventeenth century, and the discovery of the system of vessels called the lacteals was made about the middle of the same century. These vessels carry into the blood the nourishing matter called "chyle," which the stomach and intestines take from the food.

From that time no important discovery was made in anatomy, or in any of the sciences, which could throw much light upon the nature of life, or upon the causes of action in the system, until some years after 1789 ; about which time (as we have before stated) Dr. CULLEN published his famous *Methodical*

Nosology of Diseases, in which he arranged all that he had seen or heard of into classes, orders, etc., agreeably to their supposed affinity or similarity to each other. And about the same time he published his Marsh Miasmatic Doctrine of the Causes of Fevers. These publications, from the high position of their author, and the great length of time he held it, although intended for good, and at that time, no doubt, appearing to be right and proper, we shall endeavor to show have been, and, we fear, will continue to be, for many years to come, the greatest curse which has ever been inflicted on the sick, and also the greatest drawback to the acquisition of true knowledge in the healing art.

It appears that the minds of the people must always have something to excite them; for just about the time that the belief in ghosts and witchcraft was dying away, Dr. CULLEN published his system of diseases, which have been taken not as the natural consequences of violations of the laws of life and of healthful action in their systems, but as means sent and invested by the Creator with power to punish and to destroy. And in the schools of medicine they have been published and lectured about in such a way as to excite the belief, even amongst the members themselves, that they are fixed facts—things which can only be removed by specifically antidotal remedies.

At that time (1789) even the learned Dr. himself did not understand the uses of the lungs in the animal economy, as we learn from his translation of HALLER's Physiology. There was no knowledge amongst men that atmospheric air was a compound of oxygen and nitrogen gases, although it is now known that oxygen gas is more indispensably necessary to animal life than food itself. Nor was anything known at that time of the source of animal or vital heat to the blood. Hence, whenever the heat of the body rose above the healthful standard, it was called "fever heat;" and was supposed by Dr. CULLEN to be caused by that metaphysical thing called by him the "*vis medicatrix naturæ*." There was also but little known of the pressure of atmospheric air upon the earth's surface, of its expansibility, or of its capability of holding things in suspension

which could be injurious to animal life by obstructing respiration.

But, although the paths of science since 1789 have become paths of pleasantness, and thousands of the mysteries of nature have been laid open to the knowledge of men by the discovery of its laws ; and although it is now known to almost every man that atmospheric air is composed of oxygen and nitrogen gases ; that its oxygen enters the lungs at every inspiration and unites with the carbon and iron of the blood, and carries off a portion of its carbon at every expiration in the form of carbonic acid gas, and by these means both purifies and gives to the blood all its heat ; and although every member of the schools of medicine knows or ought to know that 98° of heat in the human blood, as indicated by Farenheit's thermometer, when placed under the tongue, in the armpits, etc., is the uniform standard of temperature for the healthful action of the system, and the perfect development of all its organs under the pressure of the atmosphere of 15 lbs. to the square inch ; and that any degree of heat in the blood either above or below that standard, will surely produce deranged action, or what is called disease in the system ; yet, it is a melancholy fact that the discovery of these all-important laws of the animal economy up to the present day has done but little or no good in promoting success in the practice of medicine ; for they were made slowly, whilst the imposing but delusive system of Dr. CULLEN seemed to take the confidence of the members of the allopathic school of medicine, or rather of the CULLEN school, by a species of enchantment. We say "the CULLEN school," because we shall hereafter attempt to show that his system is not compatible with the opinions advanced by the great men engaged in the study of the healing art before his time. This theory of diseases set forth by Dr. CULLEN teaches us (which, by the by, is the theory of the schools of the present day) that diseases possess such regularity of character, or symptoms, that they may, like individuals of the animal and vegetable kingdoms, be arranged into classes, orders, etc.,—that they are caused by things taken into the body,

such as miasma, contagion, cold, wet, &c.,—that they possess the attributes of power, of will, malignity, contagiousness, insidiousness, etc. Consequently, it is believed, both by practitioners of medicine and by the people generally, that diseases are to be learned by name, practiced upon by character, and cured by specifics: hence, experience is looked upon as the foundation of knowledge. In these things may readily be perceived the causes of the great lack of confidence felt by the people at the present day in the members of the allopathic school, and their disposition to change from them to the homeopathsists, hydropathsists, etc., and the encouragement they give to every nostrum or quack remedy that is brought to their notice.

How different this theory is from the truths taught us by science! by which it is made evident that, if the air breathed has not the proper quantity of oxygen in it in proportion to its volume, the blood cannot be relieved of the excess of carbon it gathers by its circulation in the body, and by which it is rendered so impure that the secretory and excretory vessels cannot act freely and carry off the heat of the blood as fast as it is evolved in the lungs by the act of breathing; and what is called fever is the consequence. The sensations of every person who has felt the commencement of a fever, or what is called “a bad cold,” caused by the lack of easy perspiration, a change of the secretions, constipation of the bowels, etc., prove the truth of this law of the animal economy. And from a deficient quantity of oxygen uniting with the iron of the blood, its circulation through the small arteries, capillaries and small veins, is impeded (as before remarked), causing it to fill back in the large arteries upon the valves of the heart, which produces what are called “congestive diseases.”

The discovery of these laws of animal economy would have afforded more light, as to the real nature and causes of deranged action in the human system, or what is called disease, and particularly of fever, than all others which have been made; but unfortunately for suffering humanity, and for the advancement of the healing art as a science, the belief in the specific nature

of diseases and of the specific operation of medicines upon them, had gotten possession of the public mind, and as yet the discovery above named has had no effect. But the truth must prevail.

It is, we believe, the current opinion with the people that the present views of medical men, as to the nature of diseases, have been handed down from age to age, and sanctioned through all past time ; but if they will examine a little into the history of theories of disease they will find much proof to show that, if the abovementioned scientific discoveries, as to the nature of atmospheric air, the source of heat to the blood, etc., had been made before Dr. CULLEN published and introduced into the schools of medicine his easy way of studying diseases, and of practicing upon them (to use his own words, "founded upon experience alone, independent of all reasoning"), neither the present theory of the nature of diseases, nor the present practice founded upon it, would have existed. Nor would the people have been indebted to a German shoemaker for the discovery and energetic use of the most valuable remedy against fever which ever has been used—cold water—as its use would have followed as a consequence of a proper understanding of what "fever" is.

The history of medicine teaches us that in all past time there have been men engaged in the humane effort of trying to relieve their fellow-creatures of the states of deranged action to which their systems were liable, but although they professed to cure diseases, they did so (at least for two hundred years before Dr. CULLEN's day) under the belief that their remedies gave relief by acting upon the solids or fluids of the body ; and not, as is believed, or as seems to be believed at the present day, both by the people and the doctors, that the remedy acts upon the disease itself, and either destroys it or drives it out of the body.

There is no authority, we confidently believe, for attributing these unphilosophical opinions to any higher antiquity than to Dr. CULLEN's *Nosology and Classification of Diseases*, with their affinities, family connections, regular symptoms, will, and modes of attack, power of continuance, critical days, particular pulse,

and with his specified treatment for each disease, etc. These opinions, coming from the source they did, had their effects upon the students of medicine and the people; and we fully believe that there never has been before, even in the darkest and most illiterate ages of the world, as much confidence felt in the belief of the specific nature of diseases, acting upon the system independent of all changes in the solids and fluids of the body, and in the specific operation of remedies upon those diseases, as there is at the present day.

It is a fact worthy of remark, if we may judge by the writings of those who preceded Dr. CULLEN, that in former times, and when science was in its infancy—(science, by the by, is nothing more than knowledge of the laws by which matter is governed, and medical science in particular a knowledge of the laws by which living matter is governed)—a knowledge of medical science, at least as far as it was then understood, was deemed indispensably necessary to the practitioner of the healing art: then the belief prevailed that the remedy given acted upon the solids or fluids of the body, and had the effect of either invigorating and strengthening the system, or of depressing and weakening its vital actions: then the student of medicine had to study the power of action, or life, going on in the body: then the pulse had to be studied with care and attention, as the only true guide to a correct knowledge of that action or life. But it is not so at the present day. For, since the introduction into the schools of Dr. CULLEN's arrangement of diseases by name into classes and orders, with his description of their general characteristics, and the peculiar symptoms of each, etc., the object of study with the student has changed, and now he has only to tax his memory with the name of the disease, its class and order, the general characteristics of each, and the particular symptoms which denote each one, and also to recollect the remedies which have been prescribed by others for them separately; and having done this, he feels himself prepared to go forth and commence the practice of medicine, whether he has studied anatomy, physiology, chemistry, or any other of the associated sciences or not.

And, as soon as he commences, he finds the shelves of the apothecaries' shops literally loaded with highly recommended remedies already prepared for the cure of diseases, the names and symptoms of which he has just committed to memory; and he may conclude that he has little else to do but to decide upon their respective merits.

Men generally are disposed to economize their time and labor as well as their money, and it must be readily seen by every one that it requires a much less expenditure of all three of these simply to commit to memory the names of diseases as arranged in Cullen's Nosology, with their general characteristics and their individual symptoms, &c., and with the names and doses of the remedies recommended for their cure, than it does to acquire a knowledge of the anatomy of the human body—of the physiological laws which govern life and healthful action in it—of the internal and external agents which act upon it, and also of the remedies, their powers and doses, which have been introduced into the catalogue of remedies for their cure.

Hence, as soon as the different states of deranged action to which the human body and its several organs are liable, were individualized under the general appellation of diseases by distinctive names, by arranging them into classes and orders, and by giving to each its specific symptoms, and also that each was to be cured or driven out of the body by specific remedies, or by a specified routine of practice, by so popular a professor of the Institutes and Practice of Medicine as Dr. Cullen was (and who had the advantage of holding his office for so many years to uphold and support his peculiar views), it is not at all surprising that his system should have gained the confidence of the members of the schools; or that they should have gained for it the confidence of the people at that time, although, as its author himself admits, "it is founded upon experience alone, independent of all reasoning." But it must be truly surprising to every person who will reflect for a moment, to find that, although at the present day, when we have not only the writings of the learned in the schools of medicine (say from the time of GALEN to that of

CULLEN), to show us that the ancients looked forward to the advance of science as the only sure means by which the people were to be taught the true nature of the deranged states of action which sometimes take place in their systems (called diseases), and the proper means of restoring action to the healthy state—as we hope the following short extracts will abundantly show—and when we live at the time when these advances in science looked forward to by them have taken place sufficiently to show the causes and the nature of that deranged action, and also the proper means by which it should be restored to the healthy state—yet, in defiance of all this, the simple, dogmatical, and unscientific system of CULLEN, that diseases are diseases, and that each has its specific or antidotal remedy, or system of remedies, by which it is to be destroyed or driven out of the body, not only continues to maintain its popularity, but has gained upon the confidence of the public, until there is now a system of practice called homeopathy, which is founded upon and is the legitimate offspring of CULLEN's theory.

It is painful to make the inquiry, yet for the public good the question should be asked,—Can the theory and practice of medicine as a science be brought lower than it is at the present day? For it is a melancholy truth that, if the action in an individual's system becomes deranged differently from the specified forms laid down in CULLEN's Nosology, it is immediately called a new disease, and the practitioner is completely at a loss to know what to do with it. For if the patient's body is too cool, he knows not why; if it is too hot, he is equally at a loss to understand the cause; and if the patient's pulse becomes oppressed, he cannot understand the cause of such oppression, simply because he has been taught to believe that all that was necessary in the study of medicine was to learn the names of diseases and their respective symptoms, and also the most popular remedies which have been used to bring about their cure.

Such is the manner of teaching the practice of medicine at the present day, and such is the manner in which it is practiced; and the people must suffer and die under it, until advancing:

science breaks down the trammels of defective education and prejudice, and demands the establishment of a system of practice more in conformity with the laws of life, and with the laws which govern healthful action in the body.

The following brief statement of the theoretical views and opinions of some of the most eminent men the world has known for the last three centuries, on the causes and nature of deranged action in the human system, or what are called diseases, will show that they neither believed in the individual and specific nature of diseases, nor that such diseases could with truth and propriety be collected into families, classes, orders, &c., as we at the present day are taught to believe they can be. And they will show, also, that the main object with these learned men was to impress upon the minds of their followers the belief that diseases were states of deranged action in the system, or some of its parts, produced by natural causes, acting by natural and fixed laws upon the solids and fluids of the body, and that the object of the practitioner should be, by the use of his remedies, to remove such cause or causes, and let the deranged action return to its healthy state as soon as possible.

The theory of GALEN, whose opinions ruled in the schools of medicine at the restoration of learning, about the commencement of the sixteenth century, taught that there was a living principle in the body, which had to remove all offending causes; that if the offending cause was removed easily no disease was produced, but if there was difficulty, derangement of action followed, which was the disease; that disease was in proportion to the difficulty of removal; and that the object of the practitioner should be either to remove the offending cause by the use of remedies, or to assist the living principle in its efforts by pursuing the indications pointed out by it, thus showing that, in his opinion, diseases were nothing more than deranged states of action in the system, or some of its parts, differing in their grades.

Here let us suppose that this eminent man, with his opinions of the nature and causes of disease already formed, could have discovered by some means what we now know to be the truth

by modern discoveries in science, and also the opinions advanced by the author of this work as to the joint action of the liver with the lungs in decarbonizing the blood, but without any evolution of heat to it, then he would have learned that the air inhaled by the lungs decarbonizes the blood and imparts to it all its vital or animal heat; and that if the air breathed is so impure that the blood fails to be decarbonized to the healthy state, the liver must assist in its decarbonization by the formation of bile, or else the secreting and excreting vessels of the system must fail also to perform their functions of carrying off the heat of the blood down to the healthful temperature of 98° , and the heat of the blood necessarily increase above that temperature (the experience of every one who has had what is called a fever, proves the existence of this law of the animal economy), and this increased heat must act upon the heart and arteries and produce increased action in them, which increased action, with its consequences, is disease.

The only changes which would have taken place in the learned professor's opinions in consequence of these last discovered truths would have been, that he could then understand that deranged action, or what is called disease, is the consequence of violations of the fixed laws of the animal economy which produce life and healthful action in the organism of the body: as, for instance, if 98° of animal heat in the blood produce life, and such a state of action in the organs of the body as insures its perfect development, a higher or lower temperature of the blood must cause such a state of action in them as will not produce its perfect development; and not, as he believed before, that deranged action in the human system was the consequence of a living but blind principle in it, making efforts to relieve it of some offending cause. And in his practice he would have been governed by his newly acquired knowledge of the fact that what is called fever is the joint effect of increased breathing, and deficient secretions and excretions.

The next theory of the causes of disease which prevailed in the schools of medicine was that brought forward and supported

with enthusiasm by the chemists (or alchemists, as they were then called). By this theory all deranged actions in the system were attributed to chemical changes going on in the solids and fluids, caused by the presence or absence of an acid or alkaline principle in them.

In this theory there was certainly no other idea entertained as to the nature of disease than that it was deranged action brought about by natural causes acting by natural laws upon the solids and fluids of the body. And it would have been a hard task to induce its advocates to believe that diseases were such regular and fixed things that they could be arranged into classes, orders, etc., with propriety, and cured by specific remedies, or specified plans of practice. It is hardly necessary for us to remark here how pleased we think the advocates of this system would have been, could they have discovered what we know at the present day as to the nature of atmospheric air, and of its effects upon the blood when brought into contact with it in the lungs, where, although neither an acid nor an alkali is produced in the blood, it effects chemical changes in it, and is the cause of all its animal heat: and how readily they would have seen the consequences which must follow from an increase of animal heat in the system above the healthy degree in disposing its solids and fluids to yield to the laws of fermentation and decay; and how anxiously they would have tried in all cases of sickness to keep the heat of the blood thus produced down to the healthful temperature of 98°.

The facts disclosed in this theory, and some others we shall mention, make it remarkable, we think, that when science was in its infancy great attempts were then made to explain the causes and nature of deranged action in the human system by the laws of nature. But, at the present day, when science has greatly advanced in all the departments of nature, both the schools of medicine and practitioners generally seem to be perfectly satisfied that the subject of diseases, or at least those which have been described by Dr. CULLEN, is one with which science has nothing to do, but experience everything. Hence, when

what is called a new disease comes about, the whole fraternity are thrown into a state of consternation to know what to do; and those who are affected by it have to suffer on until what are called proper remedies for it are found out by experience.

The next theory of disease which was supported by the schools of medicine was that of the Mechanical Philosophy, in which it was contended that healthful action in the human body was the effect of mechanical action being carried on in accordance with mechanical or mathematical laws. In fact, that all the works of nature were governed by fixed mechanical laws, and that diseased action in the organs of the human system was the consequence of some violation of these laws, and death, the effect of these laws being so far violated, as to produce a cessation of all action in the organism of the body. In the support of this theory the illustrious **BOERHAVE**, **Dr. PITCAIRN**, **Baron HALLER**, and other great men, took a conspicuous part. But this theory gave way in its turn to the theory of the humoral pathology, which taught a doctrine similar to that which had previously been taught by the chemists: that all derangements of action in the human system were caused by an acid, or an alkaline principle in the blood, causing it to become corrupt, full of humors, etc. This theory resembles very much the doctrine which the venders of nostrums and quack remedies wish to impose upon the people at the present day: "that their blood is corrupt, and mixed with peccant humors, etc.," which their remedies will purge off or sweat out, etc.

The next theory of the nature and causes of deranged or diseased action in the human system which attracted the attention of the medical schools of Europe, was that of the celebrated **GEORGE EARNESTSTAAL**, of Halle, in Saxony. The theory of this eminent chemist and professor was founded upon the supposition that the rational soul of man presides over and governs the whole economy of the body, both in its healthy and diseased state; that by means of the nerves the influence of the soul or principle of intelligence is extended throughout the system. Hence, when the blood becomes too thick; or, from any other

cause, there is an interruption to the free passage of the intelligent principle, a derangement of action takes place.

This theory held a powerful influence over the schools of medicine for many years, but was finally superseded by the theoretical opinions of the sagacious HOFFMAN of the same university. This eminent professor supposed that the remote cause of fever operated first upon the living solids of the body, by producing spasm, etc.

We have now taken a slight review of the theories of deranged action in the human system (diseases as they are called), and their causes, as advanced by the most eminent professors from the fifteenth to nearly the close of the eighteenth century, and which during that time influenced public opinion, for which we are greatly indebted to *Millar's Retrospect*. And we candidly declare that by it we cannot find, nor do we believe that others can, anything which bears the least resemblance whatever to the opinions which seem to be entertained at the present day, both by practitioners of medicine and by the people generally, as to the individuality and specific nature of diseases; nor anything which gives countenance to the belief now entertained, that remedies act as specifics, and cure diseases independently of any action upon the solids or fluids of the system, and thereby controlling the action going on in it.

Having thus shown from the best authority that, up to HOFFMAN's theory, which was the last that preceded the arrangement of diseases into classes, orders, etc., by Dr. CULLEN in 1789, there had been nothing advanced by the leading men of the schools of medicine to induce the belief by any one, of the distinctive and individual character of diseases, we will now briefly point out some of the causes which have produced the habit, both with practitioners of medicine and with the people, of thinking and speaking of deranged states of action in the system as of things which have power, will, etc., over the body, until the unfortunate belief has been produced in the minds of thousands that what are called diseases are really individual and substantive things, and upon which remedies act directly, if they

act at all, and drive or force them out of the body. We call this an unfortunate belief, because it must be evident to every one else that, as soon as it exists in the mind of any person, there is an end of all scientific improvement in that person.

After Dr. CULLEN (whom we look upon as the author of the present system, if it may be called one,) had arranged diseases (as he emphatically calls them) into classes, orders, etc., (in imitation of the plan of Linnaeus with plants and animals,) thus giving to them the character of fixed and unalterable things, and had attributed their existence to the effects of marsh miasma, contagion, cold and fear upon the body, the nature of which could not possibly be understood, he then went on to describe each disease by name, and gave to them, (by the use of such expressions as the following,—“ This disease attacks the patient,” “ the malignity of this disease,” “ this disease is attended by a hard pulse,” “ one is, an unusual quantity of bile in this disease,”) the attributes of power, will, malignity, etc., by which to become better or worse, to control the pulse, to continue a certain number of days, to relapse, to get well, or to kill the patient, etc. In these views and opinions, and in the expressions used, Dr. CULLEN has been closely followed by almost every lecturer and writer upon the subject for the last sixty years (with the exception of Dr. RUSH); and sick persons and their friends never hear anything more from the Doctor who attends, than the name of the disease, the probability of its becoming better or worse, and the probable effects of the remedies used upon the disease for which it was given, etc.

Opinions as to the nature of diseases, and the effects of remedies upon them, having gone on in this way for more than sixty years; and it being a fact which none can deny that the probability of recovery from sickness has but little if at all improved since that time, we will most respectfully ask the followers of this system, if they ought to be surprised at the fact that at the present time—when the minds of the whole people are looking anxiously for improvements in every other department of knowledge, and when too it is generally known that since the present

system of medicine was adopted many important discoveries have been made as to the nature of the air breathed, as to the uses of some of the most important organs of the body, as to the source of vital heat in the blood, and as to its decarbonization, &c., thus shedding more and more knowledge amongst men as to the true nature of life in the body, and as to the causes which produce healthful or deranged action in it—the sick are besieged with new systems of practice, such as Thompsonian or vegetable practice, the homeopathic or practice of specifics, the hydropathic or practice of cold water, &c.? Or at another fact, that the shelves of the apothecaries' stores are loaded with newly-discovered but professedly infallible remedies for every one of those things called diseases, and the newspapers of the day almost literally filled with certificates of their wonderful cures? Or ought they to be surprised at the still more important fact that the people now give credit to the very idea of the nature of diseases that they themselves have been inculcating for over sixty years, and resort to these newly discovered remedies for their cure? We should think not. For, if they will think seriously of the language they use themselves to the people in speaking of diseases, and of their remedies in curing or driving them out of their bodies, they will find that, instead of enlightening the minds of the people as to the true nature of deranged action in the organs of their bodies, they have made the subject more obscure than it was when Moses, the great expounder of the laws for the children of Israel, raised the brazen serpent in their camp to stay the ravages of the plague that was then destroying them, and promised that all who looked upon it with faith should live, whilst those who did not would surely die. In this dispensation we have the strongest evidence to prove both the goodness and mercy of the Creator, and the fact that derangements of action in the organs of the body, or what are called diseases under ordinary circumstances, are not dispensations of the Creator, but are the effects of violations of his laws for the continuance of life, and the promotion of the healthful development of the body. This plague was certainly a miracle, ordered to produce certain effects, and

the remedial effect of the brazen serpent upon it was also a miracle, ordered to destroy the plague if certain conditions were complied with.

Thus, we see that the disease and the remedy were sent at the same time, and that no other remedy could have had any effect upon it.

From this circumstance we have good reasons to hope and believe that if ever the Almighty shall again determine to suspend the regular laws of nature, and inflict upon mankind another plague, that he will do in that as he did in the other, that is, temper his judgment with his mercy by sending the antidote with the disease, and make that antidote known. But this has not been done during the prevalence of yellow fever, or the cholera. We must suppose then that neither of these was a particular dispensation of his providence. And, as we are taught to believe, both by Scripture and by our reason, that the time of miracles has passed, and that since that time the life of man has been left to the operation of nature's laws, and that the mind of man has been endowed by its Creator with capacity to comprehend those laws sufficiently for the protection of that life, if he will be obedient to them, he may learn not only to restore deranged action in his own system, but that of his neighbors, when those laws have been violated.

If each disease is not a miracle then it is deranged action in the organs of the body : and if so, that deranged action has been caused by something which produces higher or lower action in them than is consistent with their healthful development, and these causes can and must be understood before the practice of medicine can properly be called a science.

From the foregoing statement of the opinions and language of Dr. CULLEN and his followers, it must be evident that they have done but little good during the time above stated, in explaining the causes which produce derangements of action in the organs of the body, or in explaining the nature of them after they have been produced. Diseases were diseases sixty years ago, and they are diseases now ; and remedies were said to cure diseases

then, and they are said to cure them now. The followers of Dr. CULLEN seem to be irritated at the success which quack doctors and quack remedies meet with among the people ; but they should remember that the people are looking for improvement in the practice of medicine as well as in other branches of knowledge, and if they cannot find it where they first apply they will try somewhere else.

The formation of an icicle is perhaps one of the simplest developments of the laws of nature, and none can understand it, nor could they cause the process to take place with any degree of certainty if they know nothing of the laws or causes of fluidity, of gravity, congelation, &c. How impossible is it then, we will ask, for any person to understand the causes and the nature of deranged action (what is called disease) in so complicated a structure as that of the human body, without first making themselves acquainted with its organs, and the causes and laws by which they act. If this be true, then it is impossible for the members of the allopathic school to improve any further in the practice of the healing art than simply in compounding their medicines, and in what little can be gained by the experience of each individual, unless they will break through the dogmatical system of CULLEN, and apply the discoveries we have mentioned before (which Dr. CULLEN knew nothing of, as they have been made within the last sixty years, and have never been brought into the study of diseases to this day) to the more perfect understanding of what life in the body is, and to the causes which produce states of action in the system which are incompatible with the healthful development of the organs of the body.

To understand the laws of the animal economy properly, and to practice the healing art with a certainty of success, (in fact, not to be a quack,) we must bear in mind the important fact that the human body with its several parts is a development, caused by fixed laws acting under certain circumstances, as much so as the icicle mentioned above. And that, if those circumstances change, the laws cannot be carried out : or if the laws of the animal economy are violated by artificial means, the development

of the body must change also. And if the change of circumstances, whether from natural or artificial causes, goes far enough, then life in the body will be destroyed ; but if it does not, then only deranged action, or what is called disease, will take place.

The most important of these circumstances, and which should never be lost sight of by a practitioner of the healing art, are : that the human body is developed in an atmosphere which is composed of oxygen and nitrogen gases intimately blended together, but not chemically united. The first of these gases constitutes about 20 and the latter about 80 per cent. of the air of the atmosphere, with a slight mixture of carbonic acid gas and watery vapour, and this atmosphere presses upon the whole earth, and all other matter, where it is not so solid as to exclude it, with a weight of 15 lbs. to every square inch of surface ; but owing to certain causes, which it is not necessary to mention here, this pressure is rendered a little more or less at times. The great importance of a knowledge of these circumstances will render itself more and more obvious as we proceed, although the schools of medicine have not as yet thought proper to introduce changes in them as the causes of disease, and still stick to Dr. CULLEN'S *vis medicatrix naturæ*, marsh miasm, &c., as the causes.

Oxygen gas, thus blended with nitrogen or azotic gas, may be looked upon as the pabulum of life ; for if it be withheld from acting upon the blood through the medium of the lungs, for only a few moments, all action ceases in the body, and life is destroyed.

The act of breathing we will take into consideration here. This act may at first seem to be one of labor, but it is not so ; so long as respiration is carried no further than is sufficient to supply the blood with oxygen, so long as the body is in a healthy state, the air breathed has its twenty per cent. of oxygen, and is acted upon by the pressure of fifteen pounds to the square inch. For the muscles of the body which perform this act, owing to to their peculiar position, are not, in their most quiescent state, when the lungs are fully distended, nor when they are empty.

So, in either case, the slightest effort by the muscles is sufficient to produce an inhalation or exhalation of the air breathed, provided, as before remarked, the effort is assisted by the pressure of fifteen pounds. Hence the act of breathing goes on so easy, deep and full during sleep.

We see from this that there are three concurring circumstances which are necessary to insure to the blood a sufficient quantity of oxygen to keep it properly decarbonized and at the healthful temperature of ninety-eight degrees. First, the air must be pure, so as to contain twenty per cent. of oxygen. Secondly, it must not be rarefied so as to take off the pressure of fifteen pounds to the square inch. And thirdly, it must not be mixed with other matters, so as to prevent the proper quantity of oxygen coming into contact with blood in the lungs during inhalation.

By a fixed law of the animal economy, the temperature of the blood in the human body for the production and continuance of healthful action in it, must be kept as indicated by Fahrenheit's thermometer, when the bulb is placed under the tongue, in the armpits, &c., at or very nearly at ninety-eight degrees; and if, from any cause or by any means, it is raised to a higher degree, deranged action (or what is called disease) must be the result. And in the train of that result may follow decreased secretions and excretions, fever (as it is called by the schools), pain, inflammation, suppuration, gangrene, mortification (or, in other words, fermentation, putrefaction), &c., each and all of which will depend upon the quantity of that increased heat, and the state of decarbonization in which the blood is at the time, as well as upon the constitutional or habitual state of the different organs of the system. In some individuals the lungs are the weakest organs; with these, affections of the lungs will be most common. In others, the joints are the weakest organs; with these, what are called rheumatic affections will be most common, &c. If the people could be made fully to comprehend the fact that all the heat of the body is derived from breathing, and that what is called "fever heat" is nothing more than an excess of heat produced in this way, and

that it is as easily carried off as any other heat, millions upon millions of diseases (as they are called), which now maim or kill, would be prevented in their commencement. But are these simple truths taught to the people by the members of the allopathic schools of medicine? Surely not. On the contrary, they are taught by them to believe that an increase of heat in the body is a mysterious thing called fever, and that fever is a disease, which, Proteus-like, can take on some hundred or more forms, to many of which these schools have given Latin or Greek names, for the purpose of designating their peculiar characteristics or symptoms, as they are called. And finally, as we have before stated, Dr. CULLEN brought these different degrees of excess of heat in the blood, different degrees of deficient decarbonization of the blood, and different degrees of defective organization in the system, into classes, orders, &c., as if they were really substantive somethings which admit of no change or variation.

All of the above-named circumstances combined have given to the subject of deranged action in the human system a mysterious character, and one so far from the truth that even the advances in knowledge, both in anatomy and the other sciences, which we have before alluded to, cannot alter it in a short time, although it is impossible to estimate the great amount of injury the people have suffered, are now suffering, and must continue to suffer, and particularly the younger portion of them, until such alteration does take place.

The object of the author of this little work is to commence, as he hopes, a reform of this all-important subject, founded upon the knowledge of the true uses of the lungs in the animal economy—the decarbonization and oxydation of the blood by the air inhaled into them—the true source of all heat to the blood, &c., all of which has been discovered since the establishment of the present or CULLEN system of theory and practice. The application of this knowledge to the re-establishment of healthful action in the system, after it had become deranged, he can with truth say has never been injurious in any way, and has always equalled his most sanguine expectations, as he will show as he proceeds with this work.

It must be obvious to every one who will reflect upon the subject, that as soon as the minds of practitioners of medicine and of the people come into the belief that diseases are not simply deranged states of action in the organs of the system, produced by natural causes acting by natural laws, but are things which have will, power, &c., and have to be driven out of the body or *cured* (in the language of the day) by specifics, or by a certain routine of remedies, there will certainly be an end of all attempts at scientific investigations of the subject, and the aim of all will be the discovery of the hoped-for specific.

The shelves of the store of the apothecary and the columns of the newspapers of the present day attest the truth of this remark.

To make our meaning as plain as possible respecting erroneous opinions which have been formed by individuals as to the nature of deranged action in the system (diseases as they are called), we will relate the following little incident which occurred between our minister and ourself not long since, and we have no doubt that the opinion then expressed by the minister is the same with that entertained by a very large majority of the people, and perhaps a majority of practitioners of medicine. We met him at a fair, got up by the ladies of the town to raise money to purchase a parsonage. He had attended for several days in succession, and of course had gone through more fatiguing exercise than was usual with him, besides other exciting causes, but the particular cause of fatigue with him was his having to stand the greater part of the time. This position, of course, had brought into a state of tension a certain set of muscles, which were kept in action almost the whole time he remained there, which of course had become greatly excited, overstrained, and fatigued. About the third day, we observed that he seemed to suffer great pain and anxiety, and asked him if he was unwell, to which he replied, with a countenance expressive of much anxiety and alarm, "Yes! I much fear I have an attack of that wretched disease, lumbago." We then said to him, "Are you not laboring under increased excitement from the effects of fatigue?" "Yes,"

said the minister, "I believe lumbago always produces excitement in the blood-vessels, and fever." Here was evidence that this minister of the Gospel, although he is a man of much general information, and is withal a man of at least a medium share of natural intellect, was laboring under the belief that he had been attacked by, and had in his system something called "lumbago," which lumbago was able to produce in his system increased excitement in his blood-vessels, fever, and pain in his muscles; and that this "wretched lumbago" must be gotten rid of before the excitement in the blood-vessels, fever, and pain could be removed.

This opinion of our minister, as to the nature and power of "lumbago," is, we believe, a fair sample of the opinions of the people generally, at the present day, as to the nature and powers of all the different states of deranged action under which their systems labor, to which they have been taught to apply the epithet of "disease;" and it shows how easy it is for even a well-informed mind upon other subjects, to become so far led astray on this one as to take the effect for the cause, and then believe the effect to be a reality.

Had the cause (the erect position) of excited action in the muscles of our minister been continued long enough, and had his blood been in the proper state to prevent free and easy secretion and excretion, that is, not properly decarbonized (which will be explained hereafter), then deranged action in the muscles would have taken place, and what is called "lumbago" been produced. But his blood was in the healthy state, consequently a night's rest in a relaxed state restored the muscles to their proper condition, and the dreaded lumbago was averted.

Nor is this opinion of the individuality of diseases with power and will confined to the people, for it has taken possession, by the insidious influences of Dr. CULLEN's nosology of diseases, and language, more or less of the confidence of almost every practitioner of medicine, and just to the extent of that confidence has it served to prevent the advancement of the healing art as a science. In confirmation of this opinion, we will here mention,

that the system of practice lately introduced, and which has become quite popular with many, called homeopathy, is based wholly upon the belief of the specific nature of diseases ; that it is something which medicines can come into contact with and destroy, or drive from the body ; hence all remedies used by its advocates are looked upon as specifics, or antidotes, to the disease for which they are given ; and they claim to have discovered these specifics or antidotes for every disease to which the human system is liable. Consequently, with them the practice of medicine consists simply in finding out what the disease is, and then in giving or applying the remedy. And it is said to be a fact that SAMUEL CHRISTIAN HAHNEMANN, the author or discoverer of this system of practice, was in the act of translating Dr. CULLEN's *Materia Medica*, when the idea first suggested itself to his mind.

In consequence of the practitioners of this new school having met with success in practice about equal to that of the allopathists, or CULLEN school, it is quite amusing to read the admissions and confessions of some of the best modern writers of the latter, as regards their own errors and deficiencies ; whilst, at the same time, they wholly deny that there is any truth in the doctrines of their adversaries.

That our readers may see the truth of this, and judge for themselves of the probable accordance of the doctrines of either school with the laws of nature, we will here quote some remarks and admissions of Dr. FORBES, of London, who is one of the physicians to the Queen, and stands deservedly high, both as a practitioner of medicine, and as a writer. In a recent little work of his entitled "*Homeopathy, or the Young Physician*," he not only admits that practitioners on the homeopathic plan make as many cures of the various diseases submitted to their care as the allopathists do, but he further says,—“also to teach students that no system yet promulgated is true, or anything like the truth ; and that none can be adopted as a safe guide to practice.” And he also admits, “we often may hope, and frequently believe, and sometimes feel confident, that we do good, even in this class of

cases ; but the honest philanthropical thinker, the experienced scientific observer, will hesitate in the best of cases, ere he commit himself by the positive assertion that the good done has been done by him." And again he goes on to say,—“When physicians of this stamp have met in consultation in a doubtful case, and when they have chanced to be startled out of their conventionalities by the bold doubts, or bolder inquiries of some frank brother of the craft, has not the confession like the confidence been mutual ?”

“And when his comrade’s thoughts each doctor knew,
’Twas but his own suppressed till now he found.”

“From these our free confessions and bold denunciations of the feebleness and uncertainty of therapeutics, it may probably be inferred, that we are entirely skeptical of the truth of medicine as a science, and think most meanly of it as a practical art. And yet this is not so. On the contrary, we look upon medicine, regarded in all its parts, and all its bearings, as a noble and glorious profession, even in its present most imperfect state, and believe it destined to become as truly grand and glorious in actual performance as it is now in its essential aims and aspirations.” And this learned doctor of the allopathic school, in the sequel to his remarks on the homeopathic mode of practice, adds some very significant advice to young physicians ; and strongly intimates that there is something radically wrong in the teachings of the allopathic school, and advises them to go over again their studies, and try to correct the errors in their theory and practice.

After such confessions as the above, from one so high in public favor and so conversant with the present state both of the theory and practice of the healing art, it is time to hope and expect that some reform may take place, and the people of the world be set free from a system of medicine so full of errors and defects, the effects of which make the people, or at least a great part of them, almost slaves, both in person and in purse, to all who will impose upon them.

But let it not be supposed that this allopathic or CULLEN system (for he in truth was the author of it) has gone on from 1789

to the present day, without meeting with strong opposition from men of talents, with "its feeble and uncertain therapeutics" and "its present most imperfect state," and doing so much harm to the people. We have already mentioned the strong opposition it met with from the talented but unfortunate Dr. BROWN, of Edinburgh, the cotemporary of Dr. CULLEN.

Then came the ingenious theory of Dr. ERASMUS DARWIN, of England, and others. And lastly, that of Dr. BENJAMIN RUSH, of Philadelphia, who about the year 1808 made attempts to do away with some of the old, long, and unmeaning names used, and to introduce others more expressive of the parts affected. He contended that all diseases were produced by debilitating causes acting upon the body, and that the pulse was the only true guide to the practitioner to determine what was the true state of the system, whether the action going on in it was above or below the healthy point, and what should be done to restore it to that state. Dr. RUSH successfully, in part at least, combated CULLEN'S views of contagion as the cause of yellow fever and other similar affections; and if he did not alter the system of CULLEN, he greatly improved the practice of medicine. These, with some other attempts, were made to break down the system of CULLEN, but without success; from the fact that, even up to the year 1808, the uses of the lungs in the animal economy, the nature of atmospheric air, the source of animal heat to the blood, &c., were not sufficiently understood to be used in explanation of either healthful or deranged action in the system. But, at the present day, there is no such excuse, and the practice of the healing art should now take a high place amongst the sciences, and no longer remain so far behind all others in the march of improvement. If we will reflect upon the great improvements which have been made within the last half century, both in the theory and practice of surgery, we must yet hope that both the theory and practice of medicine will undergo a change for the better equally as great. What denunciations would have fallen upon the head of the poor wight who, some centuries ago, would have ventured to say to a surgeon of that day that the time was

coming when it would not be deemed best to apply the remedies to the ax or sword which had inflicted the wound, but to apply them directly to the wound itself!

But yet that time has not only come, but the time has come also when it requires a stretch of our credulity to believe that there ever was so little common sense amongst the people. : And again, even one century ago, no one would have ventured to say that the time was coming when it would be deemed by the surgeon not only unnecessary but injurious to dress a simple incised wound to the bottom, and that simply drawing its edges together and confining them so, and attending to the general health of the patient, would be sufficient to effect a cure. And yet this is the fact at the present day !

So simple and harmonious are the laws of the animal economy, as well as all the rest of nature's laws, when found out, and so beautiful is truth, when understood, that we are often obliged to acknowledge that we do more harm than good to the confiding patient by the use of remedies.

It is to point out and to explain these simple and harmonious laws of life and of healthful action in the system, and to show that, when from any cause the healthful action has become deranged, and what is called disease produced, it can be restored by much shorter and less dangerous means than are now used to effect that object, that this work is written ; and the author will candidly declare, that nothing but the hope of relieving his fellow-creatures of unnecessary suffering, and of premature death, and the long experience he has had of the truth of what he advances both in practice and in theory, could have induced him to make the attempt. When those laws of the animal economy are properly understood, and the action in a person's system has become deranged, the inquiry by the person who has the case to manage will not be, as at the present day,—“What disease is this?” “When or where did he catch it?” “What will cure this disease?” &c. But the inquiry will be,—“What causes deranged action in this person's system?” “How far does it deviate from the healthful standard?” “What will remove the cause in the

shortest time?" &c. At the present day, it is known to every intelligent surgeon that if his patient's system was in a healthy state when the wound was inflicted, and if it remains so afterwards, it will as surely heal as the day will follow the night, or any other of nature's laws be carried out. But he knows also, that if his patient's system was in an unhealthful state at the time the wound was received, or becomes so afterwards, and the action in the arterial system rises much above or falls below the healthful standard, the wound will not heal until the proper action in the bloodvessels is restored.

Nor does the intelligent surgeon apply one rule of practice to a wound of the foot, and another to a wound of the arm, and yet another to a wound on the body; nor even if the wound is inflicted on one of the most vital organs of the system, does he alter his treatment. All will go right so long as the action in the pulse is right, and all will be cured unless a change takes place in the pulse first; and if there is, then no matter whether the wound is the scratch of a pin, a cut from a sword or a broad-ax, or the tearing and bruising of a cannon ball, the danger is great, and that danger arises from the same cause in all the derangement of action in the bloodvessels.

Nature is uniform in her laws, and if arterial action becomes deranged, is either too high or too low, and the effects of the changed action fall upon the skin, the muscles, the cellular membrane, the viscera of the abdomen, the lungs, or the brain, the cause is the same, that is, the arterial action is either too high or too low, and the remedies, to succeed, must be such as will bring the deranged action back to the healthy state, whether that deranged action is called by the schools of medicine "erysipelas," "rheumatism," "dropsy," "hepatitis" (inflammation of the liver), "pneumonia" (inflammation of the lungs), "apoplexy" (inflammation of the brain), or anything else. We will here venture the assertion that no person ever knew of either of these diseases, (as they are called,) or any other existing in the system whilst the pulse remained in the healthy state; nor did he ever know of one of them remaining one hour after the pulse was brought to that state.

To practise the healing art correctly, we must understand the laws of nature as they act through the organs of the body upon its solids and fluids, and by that knowledge endeavor to correct all action, and the causes of such action as is incompatible with life, and the healthful development of the system. Let us, then, endeavor to get at the truth by studying the anatomy of the system, and those laws and causes which act upon it, as they have been developed by anatomy and the sciences, which it is the object of the author to explain.

CHAPTER II.

ON LIFE—ITS CAUSES, BEGINNING, AND EFFECTS.—HEALTHFUL ACTION IN THE SYSTEM A RESULT.—DISEASED ACTION A RESULT ALSO—ITS CAUSES.—EFFECTS OF STIMULI, ETC.

WE have before laid it down as a good rule, that before we can with propriety attempt to prevent or change any result of nature's laws, we should not only endeavor to understand the nature of such result, but also the laws and circumstances by which it is produced. (To change results is always the object in the practice of medicine.) The human body in its healthy state is a development of nature under certain laws and circumstances; and the same body, with deranged action going on in it, is tending to a different state of development, caused by some of those laws or circumstances being changed or violated.

It is the object of the author, so far as his knowledge of the sciences and medicine permits, to point out and explain the laws and circumstances under which the healthful development of the body takes place, so that deranged action in the system, tending to its imperfect development and final destruction, may be understood and corrected as soon as possible.

We have before stated the following laws and facts of the animal economy: That when atmospheric air enters the lungs it comes within the chemical influences of the blood, and a portion of its oxygen unites with a portion of the carbon of the blood, and carbonic acid gas is thrown off by the next exhalation, whilst another portion of its oxygen unites with the iron of the blood, and by these two unions converts venous into arterial blood, and at the same time heat is given to it, which heat, by means of the circulation, is distributed over the whole body. This vital or

animal heat is derived from no other source whatever, although the people have been taught to believe that they derive heat from things which surround their bodies. These are some of the most important facts connected with animal life, and should never be lost sight of by any one who wishes to trace to their proper causes the operations of life, either in a healthy or unhealthy state of the system, and particularly by those persons who wish to benefit their fellow-men, as practitioners of the art of healing.

By way of illustration, let us apply the foregoing facts connected with the decomposition of atmospheric air in the lungs, and the evolution of heat to the blood, to the creation of the first man Adam, as laid down in Holy Writ in the passage before quoted, and to which we then proposed to add a few words to make the sense as plain as possible on the subject we have before us.

The passage will then read, "And the Lord God formed man of the dust of the ground," "and gave to the body thus formed the power of being acted upon by stimuli," (gave it excitability.) At this point the body is formed, and has the power of being acted upon by stimuli; but as yet the breath of life has not been breathed into it, which is to give heat to its blood, the great stimulant to action or life, in the heart and bloodvessels; and, of course, the body is yet cold, and altogether without action or motion in it. The breath of life (atmospheric air) is then breathed into his nostrils; the lungs being ready with their air-cells to receive the air, and to expose it to the chemical action of the carbon and iron of the blood; the oxygen of the air unites with both; carbonic acid gas is formed and given out; the iron is oxydized; it is changed from venous to arterial blood, and heat is given to it. This heat is vital heat; it is the appropriate stimulus of the heart and bloodvessels. The heart obeys the law given to it by Almighty Wisdom; it contracts. That contraction closes its auricles and ventricles, and the blood that is in them moves onward. The blood in the left ventricle passes into the great artery, the aorta; and this artery contracts and drives it forward. In this way the blood was started on its rounds for life; action was commenced—action is life—and man became a living soul.

Now, let us compare the explanation here given of this passage from Holy Writ, descriptive of the creation of human life in the first man Adam (spoken some six thousand years ago), with the commencement of independent life in an infant at its birth, as it sometimes happens at the present day; and test the truth of the comparison by the anatomy of the infant before and after its birth, and by the laws of breathing as laid down above. If they agree in their general phenomena, then they both go to prove the existence of the laws of the animal economy as stated; and it would seem to the writer that none will be bold enough to deny the truth of the conclusions hereafter drawn from them.

If a comparative view of the organs of warm and cold-blooded animals is taken, it will be found that those which have warm blood have a double heart and a double circulation of their blood, whilst those which have cold blood have only a single heart and a single circulation of their blood.

Every person who has examined the heart of an infant before its birth, and of course before it has breathed, must have observed that, in consequence of an opening between the two auricles of its heart, which continues open until its birth and then closes, the blood of an infant does not pass through its lungs before its birth as it does afterwards, with the opening between the auricles closed, and after it has breathed; that, in truth, an infant's heart before it breathes is but a single heart; and the circulation of its blood but a single circulation, as in cold-blooded animals. And that, consequently, a child before its birth is as much dependent upon its mother for its heat as it is for its nourishment. Hence it is, that, as soon as a child is born, if it fails to breathe, it loses its heat and cools as fast as any dead animal would do. The blood of an unborn child never having been exposed to the action of atmospheric air in its own lungs, and consequently never having generated any heat for itself, it cannot be looked upon as a self-sustaining and independent being. But as soon as it is born and its blood passes through its own lungs, decomposes atmospheric air, and generates heat for itself, it then becomes an independent, self-warming, and self-sustaining creature. When some

children are born, they have not sufficient excitability in the surface of their bodies, to be acted upon by the change which nature intended should be the exciting cause to the action, and they fail to expand their lungs for the reception of atmospheric air. A child without this external excitability is precisely in the same situation with the great progenitor of the human race after he was created, and the power had been given him of being acted upon by stimuli, but had not had the breath of life breathed into his nostrils. The act of inflating the lungs of the child with atmospheric air is done by the attending nurse, and as soon as it is done the blood is partially decomposed by it, heat is given to the blood, and it acts upon the heart and bloodvessels as before described, and the child becomes a living soul.

Thus we see that breathing is the true and only source of heat to the blood and body of the child, and that the very first act of its life is to procure for itself this vital heat, before the supply received from its mother is too much diminished to carry on the actions of life. We see also that this vital or animal heat is the great stimulant to and promoter of action or life in the whole system. And we shall find, if we carry our inquiries far enough, that upon the production, diffusion, retention, and escape of this heat properly, and upon the proper decarbonization of the blood by the air breathed by the lungs (which will be explained more particularly hereafter), depends almost entirely (with the assistance of the food taken into the stomach) the proper development or growth of the organs of the system, and the continuance of healthful action in them; and that where the blood is imperfectly decarbonized by the air breathed by the lungs, the production, diffusion, retention, and escape of this animal heat become irregular, and constitute the cause of deranged action in the organs of the system, or of what are called diseases, in the language of the schools.

Unfortunately for the wellbeing of the human race, practitioners of medicine have been kept from making these inquiries by their preconceived belief of the peculiar nature of what are called diseases, and of fever heat; and they have gone on trying to cure

their patients of the one, and to get their systems clear of the other, by remedies discovered by experience alone, whilst the inquiry as to the true source of heat to the system has been left to the investigation of men of general science. And hence, the practice of medicine has not been benefited by the recent discoveries on this important subject, and the great mass of the people believe, even at the present day, that their bodies receive heat from the clothes they wear, the houses they live in, the fires they sit by, &c., when in truth these things only serve to prevent the escape of the heat, generated by breathing, from the surface of their bodies, limbs, &c., to a greater or less degree by exhalation; and they often serve to render it unequal in the different organs of the system, and thereby become the causes of unequal action in the bloodvessels of these different organs, which is called, in the language of the schools of medicine, "disease."

The people having been taught no other guide but that of their own sensations of warmth and coldness, as to the proper quantity of the material of heat which should be retained in their bodies, and these sensations of warmth and coldness being dependent upon the state of the nervous system of the body at the time, it is evident that if any circumstance can deprive the nervous system of its acuteness of feeling, they will be wholly at a loss to account for the phenomena which occur during the continuance of this lack of nervous sensibility. When, therefore, they labor under chilly fits, agues, &c., they believe that they are caused entirely by the absence of the material of heat in their bodies, and they attempt to restore this supposed lack of heat by surrounding their bodies with heated air, woollen clothing, &c., when in truth there is often a greater quantity of the material of heat in their systems during the continuance of these chilly fits or agues than there is during their healthy states. This lack of knowledge by the people on this important subject is the cause of more suffering and deaths than all others put together, and it must continue to have this effect until they are better informed, both as to the true source of heat to their systems, and as to its effects upon the action going on in them,

which can only be understood by a knowledge of the pulse, the nature of which we shall now endeavor more particularly to explain.

By the study of anatomy and physiology, we learn that the stomach and its assistant organs digest and purify all matter that enters the bloodvessels for the nourishment of the system (called "chyle"), and that the lungs expose it with the blood to the air to be decarbonized, heated, and oxydized. The relative proportions, then, which exist between these two systems of organs—the one to produce and purify, and the other to decarbonize, heat, and oxydize—must produce a corresponding difference in what is called the constitution, temperament, or disposition of individuals. For it must be evident, we think, to every one who reflects on the subject, that the more the blood is supplied with this principle of nutrition in its mildest state, from the relative powers of the stomach, &c., over the lungs, the less the heart and arteries will be stimulated by it; whilst, on the contrary, the more the lungs act upon it, and expose it to the air by their relative proportions, and cause it to be more and more decarbonized, heated, and oxydized, the more the heart and arteries will be stimulated into increased action, that by increased secretions and excretions the heat of the blood may be reduced to the healthful standard of ninety-eight degrees, which must be done, or else deranged action in the system must be the consequence.

Here we meet with another important cause of objection to the CULLEN or allopathic plan of generalizing, under the term "diseases," all the admitted states of deranged action to which the human system is liable, and arranging them into classes, orders, &c., as the difference in constitution or temperament, above referred to, in different individuals must add greatly to the variety of forms and grades of deranged action, or "diseases," as they call them. And instead of these diseases being looked upon simply as states of deranged action in highly organized bodies, which are governed by immutable laws, and which are truly indicated by the pulse, and will subside as soon as the pulse is put right

by any remedial agent, their plan of classifying them serves to make both practitioners of medicine and the people generally look at such derangements of action or diseases as fixed and unalterable things, which have to be driven from the body by specific or antidotal remedies.

The recent discoveries made in physiological science * as to the source of animal heat to the body, the decarbonization and oxydation of the blood, &c., with a proper knowledge of the pulse and its indications, enable us to understand the action going on in the body in its healthful and deranged states, together with the causes of the natural temperaments or constitutions of individuals (above referred to); and they also enable us to understand the causes of the artificial temperaments or constitutions we meet with every day in different individuals, which we will here endeavor to explain. It is one of the fixed laws of the Creator that the blood of every human being, whether young or old, or in whatever climate he may live, must remain at the temperature of ninety-eight degrees of Fahrenheit's thermometer, or else deranged action (disease) must be the consequence. The habits of individuals are caused more by fashion and prejudice than by a knowledge of the laws of nature which govern life in the body; and hence, although every one will admit that there is a difference in the temperament or constitution of individuals; yet almost all mothers without reflection clothe their children

* We will here take the liberty of remarking that we term all discoveries in physiology recent which have been made since the time of the publication of Dr. CULLEN'S *Nosology and Classification of Diseases*, because from the time of that publication to the present, there has been no improvement in the practice of medicine as a science. This seems to be a bold assertion, but it is nevertheless true. We do not wish to be understood as saying that there has been no improvement in the art of preparing and compounding medicines, in which chemical science has much to do, nor do we mean to deny that experience has taught practitioners of medicine to allow their patients cool air, cool drinks, &c., much more extensively than they once did. But we wholly deny that this has been caused by any improved scientific views in the mind of the practitioner as to the nature of the life he is called upon to save, the nature of the causes which menace its destruction, or as to the nature of the curative powers of the remedies he uses.

with flannels next their skins, and thousands of grown persons equally without reflection adopt the same kind of clothing.

The most serious consequence arising from the use of flannel next the skin is, that when it is once adopted, however injurious the effects may be, it is never suspected of being the cause.

The immediate effect of wearing flannels next the skin is, to prevent the escape of the animal heat, evolved in the blood by breathing, from passing from the body by radiation, and to cause it all to pass off (whilst it does pass) by perspiration, and to promote the other secretions and excretions of the system. This causes the skin to become soft, moist, and warm, of those persons whose temperament is suitable, and whose blood continues to be properly decarbonized and oxydized by the air breathed by their lungs. Fat is rapidly deposited in the cellular tissues of the body, and the individual is congratulated upon his good health and looks. This state of things may go on until excessive fatness is produced; but it cannot continue through a long life, for the time must come when the fatness must reach the maximum point at which the heart can support the circulation of the blood with healthful force; and when it does, then a reverse state of action must take place, and what is called dyspepsia be produced.

But the most common cause, by which a check is given to this state of the system produced by wearing flannels next the skin, is by the blood of the individual failing to be decarbonized and oxydized to the healthy point, owing to the air breathed not being sufficiently pure, or too much mixed with other things to produce that effect, and then the exposure of the individual to some cause, such as cold, wet, &c., which checks perspiration. It must be evident to every one, as heat is only derived from breathing, and is only carried from the blood by perspiration, the secretions, &c., that as soon as this is done, perspiration is checked, and heat must accumulate in the blood above the healthful standard of 98 degrees. And now, as the internal secretions and excretions can only go on easily when the blood is at the proper temperature, they are checked also, and constipation of the bowels, &c., comes on. During this time the

heat of the blood is increasing rapidly, as the warmer it becomes the faster the heart, arteries and lungs are driven to action, and the more rapidly they act the more they give off heat to the blood, &c.; but the nervous sensibility is being worn down by this increase of heat (by another law of the Creator to protect life) and the sensation of chilliness is produced. This state of the system is what is called, in the language of the schools of medicine, "a catarrh," or "bad cold," but it may terminate in consumption, pleurisy, rheumatism, or almost anything else.

On the other hand, with those persons who have different temperaments, whose lungs generate heat too fast in proportion to the digestive powers of their stomachs for generating chyle, the effects of flannels worn next their skins is to raise the heat of their blood above the ordinary perspiring point; consequently, their pulse is always full and hard, which, instead of serving to promote the deposit of fat in the cellular membranes, causes it rather to be absorbed and carried out of the system. And these persons, although they may eat heartily, whether young or old, are always very poor of flesh. These are some of the practical effects of indiscriminately wearing flannels next the skin. And they are mentioned here, that those persons who wish to study the pulse in different persons under different circumstances may be apprised of the fact that all fat persons, and particularly those who are made more so by flannels, have pulses which are weak, soft, and yielding to pressure, whilst those persons who are made lean by the same cause have pulses which are strong and incompressible. This subject of wearing flannel next the skin is cursorily mentioned here, that the important one of the pulse may be brought to the attention of our readers in every point of view; and the author will assure them that a proper knowledge of deranged or diseased action in the system can only be obtained by a proper knowledge of the pulse.

The decomposition of atmospheric air in the lungs being the whole and only source of heat to the blood in the living body, and that heat being the great exciting cause to action or life in the heart and arteries, and there being but one point, quantity or

force of that action or life, at which the functions of the organs of the system, such as digestion, assimilation, secretion, excretion, &c., can go on properly and healthfully, for the perfect development of the whole, and the pulse—which a kind Creator has placed so conspicuously both to sight and touch at the most convenient points of the whole system—being the only true and certain guide to show the force of the action that is going on in the heart and arteries, does it not (we will candidly ask) seem to be a violation of both the will of a good and wise Creator, and of the duty we owe to ourselves, to our families, and to our neighbors, not to study the pulse brought so conspicuously before us, and make ourselves acquainted with their important indications? There are two causes which have helped to produce this neglect, neither of which, however, is founded on truth. The first is, the people have been induced to believe that it is extremely difficult to understand the pulse; and the second, the people have been induced to believe that the state of the pulse during a state of “deranged action,” or “disease,” as it is called, is caused by the disease, instead of their being taught that the deranged state of the pulse is the disease itself. In proof of the latter assertion, we believe we may, without fear of contradiction, say that every writer, from the time of CULLEN (he included) to the present, when treating of diseases, uses language such as the following: “This disease produces a hard pulse,” “this disease is attended by a soft pulse,” &c. Thus producing in the mind of the reader the idea that the state of the pulse is caused by, or is a mere incident to the disease; and that if the pulse were by any means changed from hard to soft, or from soft to hard, the disease itself would be but little affected by it. Whereas, and in truth, if in any disease, (no matter by what name it has been called,) which is attended by a hard pulse, the pulse is changed to soft, that disease is as certainly gone, and the patient will suffer no more from it, as any other event is certain which is dependent upon causes. And so it will be with any disease which is attended by a soft or weak pulse. If the pulse can be restored to its healthful standard of action, the disease (as it is called) will

certainly exist no longer. We do not mean to say that as soon as a hard pulse is made soft, or a soft or weak pulse is brought to the healthful standard, all the effects of the previously deranged state will immediately disappear; but we do mean to say that as soon as the pulse is put right, nature will remove the injury done as soon as possible.

From writers treating of the states of the pulse as being governed by the disease, their readers would of course conclude that it was scarcely worth their time and trouble to attend to the pulse, except in such diseases as they were told may require the use of the lancet; and this unfortunately is the case at the present day. Whereas, if all writers had taught that a state of the pulse which is harder, or has more force in it, than the healthful development of the organs of the system requires, is disease, and that this disease can only be removed by lessening the hardness and force of the pulse down to the healthful standard, and removing the cause; and also that a pulse which is too weak, or too soft, for the healthful development of the system, is disease, which can only be cured or removed by giving to the system more strength and firmness of action, both practitioners of medicine and the people would certainly have taken more interest in the study of the pulse.

We will now endeavor to show that it is not as hard a matter to understand the pulse as the people have been taught to believe. And in doing so we shall attempt to give a more perfect description than we have hitherto done of the heart and bloodvessels, of the pulse, and of the various indications which their different states of action imply, and in doing so we declare, upon the honor of a man, that we are about to reveal some things, in regard to the nature and indications of the pulse, which have never, so far as we know, been stated before by any person whatever, and without a knowledge of which it is impossible to have that distinct and correct understanding of the subject which its importance to mankind requires. We beg therefore our reader's earnest attention; and knowing the truth of what we are about to remark, both by experience and by reason, we

make the following statement without fear of successful contradiction.

The terms "hard," "tense," "oppressed," and "depressed pulse," are used by writers and practitioners of medicine; and the necessity for bleeding, in diseases which are accompanied by such states of the pulse, is generally insisted upon. But if there has been any attempt at an explanation of them any further than that they are caused by the peculiar disease which they accompany, we have never seen or heard of it. And these writers inculcate the idea of the individuality and self-existence of these diseases! Now, we think it must be admitted by all that, so long as this view of the subject prevails, there is no hope of improvement of the practice on those diseases any further than the little that is gained by supposing, from the effects of particular remedies on one disease, what will be their probable effects on others supposed to be similar. Whereas, if the true nature of such states of the pulse were understood, and that deranged state was looked upon as the disease itself, the proper remedy to give relief would suggest itself to the practitioner, whether he had ever seen a similar disease (as it is called) before or not.

We now proceed to give an explanation of the causes of these states of the pulse; and we promise, under the above sacred pledge, that if our readers will study the principles laid down in the following description of the bloodvessels of the system and the pulse, and habituate themselves to the pulse, by feeling it, until they comprehend those principles thoroughly, they will have no cause to fear the propriety of their own determinations hereafter to bleed or not to bleed a patient, whether the disease is called by writers "typhus," "nervous," "congestive," or "puerperal;" or whether the disease under consideration is one day or one week old; or whether the case is similar to others or perfectly new. The principles here laid down are correct, and will always prove true in practice, and must be carried out, or the patient must suffer more or less in proportion to the necessity of the case.

Nor do these principles stop with simply determining whether

blood is to be taken from a patient or not; but they hold good in determining all grades of remedies, from the most extensive use of the lancet and the application of cold to the body, to the most extensive use of stimuli.

And, in truth, that patient is to be pitied whose physician resorts to any other principle by which his practice is governed, whether the disease is termed intermittent, remittent, or continued; nor does the fact of sick persons having chills or agues on them at the time make any difference, the danger being in not carrying the principle into practice.

We here solemnly declare that, for the last ten or twelve years, or since we have properly understood and given full confidence to these principles of action in the human system, we have never bled, given a dose of medicine to, abstracted the heat from a patient, or used any other remedial means, from any other motive than to carry into practice these principles; and we can also declare that they have never deceived us, the effect being, as anticipated, always favorable to the recovery of the patient, if it was in the power of the organs of the system to produce such a result. And we earnestly beg of all who may read this volume, to study the pulse, the causes of its different states of action, and not to stop until they have made themselves as thoroughly acquainted with the subject as their own situation and means of information will justify, as no one can tell how soon his knowledge of the pulse may enable him to save the life of a fellow-creature.

Many persons think that the action of the heart and arteries, as indicated by the pulse, and particularly during what is called "disease," is a mystery, or at least something which cannot be understood without a previous knowledge of the anatomy of the whole system, and perhaps a knowledge of the disease also. But this is not true, any more than it is to suppose that every person must take a common pump or steam-engine to pieces before he can understand the principles upon which it acts.

And, in truth, the circulation of the blood, so far only as regards its passing from the left ventricle of the heart by a valve into the great artery, and thence over the system for the purpose of nu-

trition, &c., and then returning by the veins to the right auricle of the heart, and thence to the right ventricle, whence it is driven by the pulmonary artery into the lungs to be decarbonized, oxydized, and warmed, and then taken back to the left auricle of the heart, is not a more complicated operation, nor are the organs by which it is performed more complex or difficult to be understood than the construction and operation of a low-pressure steam-engine.

The simple description hereafter given of the circulation of the blood, and of the organs through which it passes, a frequent recurrence by each individual to his own pulse, and the knowledge of the fact that animal or vital heat is wholly derived from the atmospheric air on which the blood acts in the lungs, and also that the vital heat thus derived is the great exciting cause to action in the heart and arteries, we believe, if properly reflected upon, will lead the mind to a correct understanding of this all-important subject.

And, by way of encouragement to the study of this subject, we remark that, by gaining a knowledge of the pulse, of its causes of action, and of the indications of that action, the mind of the individual is set free from false alarms and imagined dangers, whilst by the same means it is forewarned of the approach of any real danger to life. The cause of suffering in any part of the system will be rightly understood, the proper remedy for its relief suggested, and the purse of the individual kept free from heavy demands being made upon it.

Most of the difficulties which now exist to the removal of deranged action in the human system—in other words, of properly understanding the subject—have arisen from the fact that deranged states of action (called “diseases”) had to be operated upon, and opinions formed, long before the organism of the body and the laws by which it is governed were understood. Consequently, the effect was often taken for the cause, and the term “disease” was substituted for something more descriptive of the nature of the deranged action going on in the system, as when writers on the subject say,—“This disease is attended by a hard pulse, a tense pulse,” &c.

Now let us examine, as a sample, the facts in connection with the disease called "rheumatism." From many causes, perspiration may be checked, and if the blood of the individual is not in a healthful state of decarbonization (or if, to use the common expression of the day, the individual may be "disposed to be bilious"), it may not be restored again by the unaided powers of the system. The effect of this must be to increase both the quantity and heat of the blood, which, acting upon the heart and arteries, must necessarily greatly increase their action both in force and frequency, and this will be shown in the pulse. The blood-vessels about the joints of those individuals who are constitutionally disposed to this weakness, will now become full and enlarged, and, of course, extremely painful. This state of deranged action is called rheumatism, and writers, in their description of this disease (as they call it) say it is always attended by a hard pulse, thus leaving the impression on the minds of their readers that the thing called rheumatism comes first, and causes the hard state of the pulse; and that, if the rheumatism can be cured, the hard state of the pulse will subside, &c. Hence, thousands of nostrums and specifics for the cure of rheumatism are brought to the notice of the unfortunate sufferers from this state of deranged action in their systems. Here the author ventures the assertion, and pledges everything he holds dear upon its truth, that if the hardness of the pulse, consequent upon the increased quantity and heat of the blood, had been removed before the evidences of what is called "rheumatism" had showed themselves, there would have been none of them; and that no case of rheumatism ever was cured, or ever will be, until that increase of blood and heat is removed.

To make the great advantages of understanding the pulse as plain as possible, we will relate the following incident; but, before we do so, we must remark that the power here displayed is no mystery, nor acquirement which any person cannot gain who has the sense of touch moderately developed in the ends of the fingers, and who will use a little reflection.

Some time ago, we met an acquaintance in the street, who,

after a little conversation, observed that he was laboring under the disease called "piles," and was under treatment by a physician for it, but as yet had received no benefit. He then asked our opinion as to what ought to be done. After feeling his pulse very deliberately, we said that we did not wish to interfere with any one's practice, but as a friend we would say that, unless something was done to soften his pulse, he had a great deal to suffer; to which he replied, "I suppose you mean that I must be bled, or take medicine internally, to weaken me; that I cannot do." "Yes," we replied, "unless your pulse is made softer and freer, you have much to suffer." He then said, "I must bear it, for I will neither be bled nor take medicine for this disease." So we parted. Some months afterwards, we heard that this gentleman had an abscess on his liver, which had fortunately pointed outwards, and had been opened. A few days afterwards, we called to see him. After we had listened to the relation of his sufferings attentively, to his expressions of loss of all hope of ever being a well man again, &c., and had attentively felt his pulse, we asked him if he remembered the conversation we had in the street; to which he replied that he not only remembered it, but had often greatly regretted that he had not followed our advice. "But," he continued, "I suppose it is too late now, and I must die." We then said to him, "No, you will not die from this attack. When I spoke to you and felt your pulse the last time we met, it was then too hard and full for health, and it must be altered, or you would suffer greatly. But I must tell you that what you have suffered has altered your pulse; it is now right, and you will as surely get well now, whether you take any more medicine or not, as you were sure to suffer then." This communication was received with as much incredulity as the other one had been, in consequence of the great danger he thought himself in. But in a few weeks this gentleman was attending to his professional business, and is now in the enjoyment of good health.

Many persons (and we fear this remark will apply to some who profess to practice the healing art, and have diplomas to license

their doing so) conclude that they know enough of the pulse if they have learned how to place their fingers on the artery and count its pulsations, whether they understand how the blood circulates through the system or not. And some others think—if they have studied the subject enough to know that the heart has four cavities, two of which are called “auricles,” and the other two “ventricles”; and that after the blood leaves the left ventricle it passes into the great artery called the “aorta”; that this artery continues to divide and subdivide until it sends off branches to all parts of the system, until their extremities become so small that many of them cannot pass the red globules of blood through their cavities; and that then the blood enters what are called the “capillaries” and “small veins,” which, uniting in a similar manner as the great artery had divided, form the great vein called the “vena cava,” which carries the blood back to the heart, where it enters the right auricle, thence to the right ventricle, and thence it is driven into and distributed through the lungs to be exposed by means of air-cells to the air of the atmosphere, and is again taken up by the pulmonary veins, which unite and carry it back to the left auricle, from which it is driven into the left ventricle, whence it started—that if they do not know all that can be known, they know all which is necessary to be known, unless the system comes under the influence of some disease; and, in that case, the disease impresses upon the heart and arteries, and of course upon the pulse, its own peculiar effects, and a particular kind of pulse is the consequence, which can only be understood by a previous knowledge of the disease that produces it. This idea of the different states of the pulse being caused by the disease is unfortunately inculcated by all writers who have heretofore written upon the subject of deranged action in the human system under the term “disease,” by treating the subject as though all changes in the pulse from the healthy state were the effects of diseases as of individual somethings which are self-existing, and possessed of will, power, &c., and have to be cured or destroyed as such; or, to use one of the popular ideas of the day, have to be driven out of the system. For, when they treat of particular

diseases (as they term them) they invariably use such language as the following: "This disease is attended by a hard pulse." "This disease is attended by a tense pulse, a dry cough, &c." "Peumonia generally makes its attacks in a less ambiguous way; by a severe pain in the head and a cough, with much difficulty of breathing." "A strong, hard and frequent pulse is often the first symptom of this disease." This language, acting upon the minds of readers who have made themselves but partially acquainted with the circulation of the blood in the human system, with the nature and causes of the pulse and its changes, and who know nothing of the decarbonization of the blood, and of the source of vital heat to it—the great stimulant to action in the heart and arteries—has left them fully under the impression that the things called "diseases" are things which can attack the human system at their will and pleasure, and produce this hard state of the pulse, &c. These authors never inculcate the idea that the hard and tense state of the pulse is the effect of stimulating causes acting upon the excitability of the heart and arteries, and that this state of the pulse is the disease itself, as we have shown in the case of rheumatism, which in truth they could not have done until within a few years past, as they knew nothing, and could know nothing, of the source of heat to the blood—the great cause of excitation to action in the heart and arteries; but they go on inculcating the belief that the practitioner has to cure the disease, or drive it out of the system, and the pulse will come right as a matter of course.

The effect of such teaching has been to cause thousands who profess to practice the healing art to come to the conclusion that diseases are things which are independent of law, or of any known law of the animal economy; and that they can only be cured or driven out of the body by the specific operation of certain remedies which can be found out by experience alone. These practitioners are called homeopathists, who surrender, of course, by their belief in the specific operation of their remedies, all use of knowledge in anatomy, chemistry, &c. From these the "allopathists," or "members of the old school," as they are called, differ

in this, that they still hold on to the skirts of science, believe it necessary to learn the anatomy of the system, something of the laws of chemistry, &c. ; and they claim the right of exercising their discretion as to the time and state of the disease, the situation of the patient, and other circumstances, under which they are to use their remedies. They use the same language with the homeopathists as to the cure or expulsion of the disease from the body, although they do not claim that in all cases their remedies act as specifics or antidotes, but that they sometimes cure by acting upon the organs of the system through their physiological laws. Thus, as we before remarked, they hold on to the skirts of science in some things, whilst in others they yield to popular prejudice and feed its weaknesses. But they complain that the people will not understand their system, whilst the homeopathists come directly forward, throw science aside, and boldly declaring for their discovered antidotes, assert that they enter the circulating blood, pursue the disease to any part of the system, and expel it therefrom.

When this subject is taken into serious consideration by persons who sympathize with their unhappy fellow-beings, and who wish them relieved of all pain and suffering which might be avoided by the exercise of a proper knowledge of the laws of the animal economy, and the powers of remedial agents, and are aware of the doubtful, confused, and unsettled state into which the practice of the healing art has fallen at the present day, they will naturally ask the question,—Can this be so in the middle of the nineteenth century? When the mind of man upon all other subjects seems to have penetrated the most secret and hidden recesses of Nature, and traced out her laws—when he makes steam do the work of his hands, and almost annihilate space—when he makes the very elements subjects of his will—the lightning his swift messenger to transmit his thoughts—and the rays of the sun the ready painter of the object of his affections—are healthful action in the human system, the causes which derange it, and the proper means of its restoration, the only objects which elude his investigating power?

If we discard from our minds all belief of there being such a thing as "disease," which can affect the human body independently and apart from deranged action in the system, brought on by the operation of natural causes acting by natural laws upon an organized and excitable body; and believe that the regular and proper action going on in this organized body produces its own perfect and healthful development; and that that development or growth goes on just so long as such regular and proper action continues, but no longer; and that, as soon as that regular and proper action is changed, modified, or altered in any way whatever, that is deranged action, or what is called "disease," which is in proportion to the change of action which has taken place; and that a change in the development of the organization must now take place also, such as boils, abscesses, "proud-flesh" (as it is called), mortification, decay, &c.; but that, as soon as the causes of this deranged or changed state of action are removed, the proper and healthful state of action will be restored, and the healthful development of the organs will again take place,—we shall then understand what "disease" (as it is called) is, and be prepared to use for the benefit of the sick all the knowledge the study of anatomy, physiology, chemistry, and all the branches of science has given us. But so long as we believe that "disease" is anything but this, or that the cure of disease is anything else than the restoration of that state of action in the organs of the system which is indispensable to their proper growth and development, so long will the study of the sciences be useless labor to the practitioner of medicine, and so long will the people remain dupes to impostors and their nostrums.

When we have formed a correct opinion of the nature and causes of deranged action, and of its effects upon the system, and meet with what is termed "disease," which we are called upon to cure, we do not begin our inquiries with,—“What disease is this?” “How many days since it commenced its attack?” “What remedies have cured similar cases?” &c. But we begin the inquiry by feeling the pulse of the patient, to find out how far the action in his or her system deviates from the healthful

state—what has caused and still keeps up this unhealthful state of action—what will soonest bring back this deranged action to the healthful state, and what will remove the original cause of its derangement, &c.

If the deranged action (disease) has been caused by breathing impure air, by eating unhealthful food, by wearing too much or too little clothing, by fatigue, or by exposure, &c., we call upon our knowledge of anatomy, of physiology, of chemistry, &c., to know what effects the above causes will produce upon the action of the organs of the system ; and we call upon our knowledge of the pulse to show us how far the action in the heart and arteries deviates from the healthful standard.

These are the legitimate inquiries which must follow upon a proper knowledge of what “disease” or deranged action in the system is ; and if our principles are correct, and our deductions properly drawn, our practice must be correct.

How different these views are from the popular belief which has been inculcated in the minds of the people ever since the introduction of CULLEN’S Methodical Nosology into the schools of medicine, that the Creator of man has designedly afflicted him with a set of “diseases,” and has also created a set of antidotes for them, which may be used sometimes as the circumstances of the case require, but more frequently as accident permits ! The number, names, and different preparations of these remedies, are to be found in the dispensatories of the different schools of medicine, which now fill a volume of about a 1000 pages, closely printed ; all of which are said to have curative effects upon one or the other of the diseases to which the human system is said to be liable. This circumstance alone, we think, should satisfy every dispassionate mind of the utter absurdity of the present system of medicine, both in its belief as to the nature of diseases, and as to its object in the use of remedies.

We shall now go on to describe the pulse and its indications, and in doing so redeem the pledge we have given of revealing some circumstances in connection with it which have never before been made known, and by which the state of the circula-

tion of the blood can be judged of and determined upon with certainty.

The pulse is that throbbing of the arteries which has been made so plain, by the All-wise and Good Creator, both to the eye and to the sense of touch, at the temples, neck, and wrist, that no persons may remain in danger to life from deranged action in their systems, if they will make themselves acquainted with the pulse, without its becoming obvious both to themselves and to those who may be by; so that the divine command of love to your neighbor may be carried into practice.

To understand the pulse properly, we must constantly bear in mind, that the auricles and ventricles of the heart are cavities which receive small quantities of blood at each of their dilations, and drive it forward at each of their contractions, the auricles driving it into the ventricles, and these into the arteries. —The left ventricle of the heart (the point from which we start) receives the blood from its corresponding auricle, and drives it into the great artery, the aorta. This artery, at its junction with the ventricle, has a valve, which acts upon the same principle as the valve of a forcing water-pump, or a steam-engine, and prevents the blood which has just passed into the artery from returning again into the ventricle at its next dilatation, which it must do were it not for this valve, as the contraction of the artery takes place almost simultaneously with the expansion of the ventricle. This valve and its manner of action, we hope, will never be lost sight of by our readers, as it will be referred to again and again, and as it plays so important a part in the economy of life, particularly in a high state of deranged action in the system. It should be borne in mind, also, that each of the separated quantities of blood which is cut off by the opening and shutting of this valve, continues to course along the whole length of the artery, like a wave, until it reaches the smallest extremity of the artery, continuing separate and distinct from the one which precedes, as well as the one which follows it, thus constituting a separate and distinct pulse so long as anything like healthful action is taking place; these are the pulses we feel so distinctly at the wrist, neck, and temples.

The next particular to which we wish to call the attention of our readers is, that the arteries are hollow, elastic tubes, which become smaller and smaller, from the great aorta to their extremities; and that very many of them become so extremely small that they cannot pass the red globules of blood through them; consequently they become white, or transparent, and have the name of "capillaries" given them, because they resemble hair in appearance.

As the arteries, from the aorta to these capillaries, divide and subdivide, and become individually smaller, whilst their united capacities would be much greater than at the beginning, it must be evident that the contractile force of the ventricle of the heart, with which the blood started, is soon lost, and that it has then to be driven forward by the contractile power of the artery itself; and therefore if any defect or resulting consequence takes place in the circulation of the blood, it will first commence in the extremities of the arteries, and particularly in those on the surface of the body, which are exposed to the vicissitudes of heat and cold, moisture, dryness, &c. These circumstances, we hope, our readers will remember distinctly, and that they will suffer their own minds to reason upon them, as they form the basis upon which the truth or falsity of our future remarks and conclusions upon the great importance of a knowledge of the pulse rests, and are indispensably necessary to a proper understanding of the whole subject. Our remarks and explanations upon the different states of the pulse which follow, are, we believe, wholly new; but the evidence of their truth, and of their great importance to the proper understanding of the subject, is too plain to be denied by any one.

Having thus partially described the heart, its auricles and ventricles, the valve between the left ventricle and the great artery, the aorta, and the divisions of the arteries, until they have reached their ultimate fineness as capillaries and small arteries, we come next to the veins. As soon as the arteries become so small in size and thin in their coats as to lose all elastic power, they take on the more simple character of veins, which unite in a

similar manner as the arteries had divided, and become larger and larger until they form the great vein, the vena cava, which carries the blood back and empties it into the right auricle of the heart.

Here we beg our readers not to fail to impress fully upon their memories the different characteristics of these two sets of vessels, the arteries and the veins ; the difference which exists between arterial and venous blood in a healthy state of the system, and also with the difference of causes which propel the blood through the cavities of the arteries and through the veins.

Arteries are elastic tubes with muscular coats, which have the power of expansion and contraction enabling them to force the wave or jet of blood along their whole length. This power is stimulated into action by the peculiar stimulating properties of arterial blood, which can be greatly increased and diminished.

Veins are non-elastic tubes (or very nearly so), which merely yield to the quantity of blood that is in them ; and that blood is caused to move along their cavities by the vacuum which otherwise would be formed in them by the contractile and expansive power of the right ventricle of the heart forcing the blood into the pulmonary artery.

Thus we see the fact plainly shown, that whilst the ventricles of the heart act upon the blood of the arteries as two forcing-pumps, they act also upon the blood of the veins as two drawing or suction pumps ; but whilst this is the only cause which moves the blood of the veins toward the heart, it is not the only one that assists in distributing it by the arteries throughout the system. Arterial blood is of a much brighter red color, and more fluid than venous blood. Its bright color has been caused by a portion of its carbon having been taken from it, and its iron oxydized, by the action of the oxygen of the air in the lungs, more recently than that of venous blood ; and its greater heat has been caused by these effects being produced, as before explained. Although we hope our readers understand fully that the lungs, assisted by pure atmospheric air, and the liver, by its secretions and excretions, are the means by which the blood is purified, we wish them to under-

stand also the different means by which it is rendered impure. We therefore wish to call their attention at this place to the subjects of absorption and excretion in general.

It will be recollected that the blood of what is called the long circulation (or that which flows from the left ventricle of the heart and passes through the aorta and its ramifications to all parts of the system, &c.,) is charged with all matter for the nourishment and growth of the brain, the lungs, even the heart itself, the abdominal viscera, the muscles, bones, skin, and every other part of the system; and that so likewise is the blood, returning from this circulation through the corresponding veins, charged with all the impure and offensive matters collected by the absorbent vessels from all parts of the system. If, for instance, a nail is partially torn from the finger, and the injured parts inflame and fester; if a tooth is decaying in the mouth; if an eye is injured; if a muscle of any part of the body or limbs is bruised; if a bone is broken; if an abscess or boil is formed in any part of the system; if a gunshot wound is received, &c., all offending matters formed, or caused by any of these circumstances, which are not thrown immediately from the system externally, have to be taken up by the absorbent vessels, as well as all matter which has to be changed from increased growth, &c., of the parts, and carried into the blood again, where it will be reëlaborated and prepared for use, or it will be rejected entirely and carried out of the system by the excreting vessels of the skin, the bowels, or the kidneys.

Here we think our readers will come to a proper understanding of the expression "cured," which is so often used, without the person using it having the least idea of its true signification. When either of the above-named circumstances occurs—that is, when a nail is partially torn from the finger, and it inflames and festers, or an abscess is formed, or a case of deranged action, called "disease," takes place, and the offending matters or causes of deranged action are gotten rid of by absorption and assimilation, or rejection, and the injured parts are restored to their original state by the deposition of new matter by secretion, then the case is cured. How far a knowledge of these laws of the animal

economy occupies the minds of those who prescribe cod-liver oil, and other specific remedies to cure consumption and other diseases, we leave to others to guess.

If our readers will be kind enough to bear in mind that this long circulation has not only to distribute heat to all parts of the system, and to carry on nutrition by secretion, &c., but that it has also to perform the duties of absorption, secretion, and excretion for the whole, we believe that every one must see and understand that these various duties can only be carried on properly whilst the circulation of the blood is going on regularly and in a healthful state, and that all symptoms of what are called diseases, such as inflammation, suppuration, improper secretions and excretions, &c., are the effects of the circulation being deranged from the healthful state. Nor can they fail to see, we also believe, the goodness of the Creator in placing the pulse so conspicuously in view that the state of the circulation may be judged of at all times.

We now wish to call the attention of our readers particularly to what is called the short circulation of the blood, or that which passes through the lungs, and is wholly disconnected with the other only as it passes through the heart.

The objects of this circulation in the economy of life are altogether different from those of the other, as it has nothing to do with the secretions, or the nourishment of the system, but is designed wholly to decarbonize or purify the blood, to oxydize its iron, and to gain heat for the whole system, so that when it passes through the other again it is prepared to nourish and support the system as before described.

Venous blood, on its arrival in the right auricle of the heart by the great vein (the vena cava), will be found, if compared with what it was when it quitted the left ventricle as arterial blood, to be much darker in color, thicker in consistence, and cooler in temperature, as it has now deposited the assimilated matters it before contained for the growth and support of the muscles, sinews, bones, &c., of the system—supplied all the organs of secretion with their peculiar matters—given off to the

organs of excretion and perspiration matters not fit for further use, and parted also with a portion of its heat during the round of its circulation. It has received during the same time the unassimilated chyle from the stomach and its associated organs of digestion, all the rejected matters which have been taken up by the absorbent vessels of the whole system, and also, if there be any to be absorbed, some of the bruised, suppurated, or mortified matters before spoken of. These altogether constitute the venous blood when it arrives at the right auricle of the heart.

A very slight view of this blood must show to the observer that it is not now in the condition to go through the same round of the circulation again, and that if it had to do so without meeting atmospheric air in the lungs, it must immediately produce a cessation of action, and death, because it is not now prepared to give to the same ventricle of the heart, and to the same arteries, the same kind and degree of stimulation it did before ; but it is now prepared to give to the other or right auricle of the heart and ventricle, and to the pulmonary artery, their proper degree of stimulation and of action. Consequently, as soon as venous blood arrives in the right auricle of the heart it contracts and drives it through the opening of its valve into the right ventricle, which also contracts and drives it through the opening of its valve into the great pulmonary artery, which likewise contracts and drives it to and distributes it on the air-cells of the lungs, where it is exposed to the action of atmospheric air at the next inspiration.

Atmospheric air is a mixture of from 20 to 27 parts of oxygen, and 73 to 80 of azote or nitrogen gas, with generally a small portion of carbonic acid gas. The oxygen gas is the part of the air which acts upon the blood, and of course is the part which is essential for breathing and for the support of life ; a due proportion of it, then, in the air breathed is always necessary for the purification of the blood and for the support of healthful action in the system. The causes which render atmospheric air impure, and of course unfit for the promotion of healthful action in the system, will be treated of more particularly hereafter.

It is supposed by many persons that the lungs exercise some

peculiar effects upon the blood itself, or upon the air which is taken into their cells at each inspiration, to facilitate its oxydation and decarbonization, besides those of simply exposing it at the proper temperature, and with only a thin membrane intervening, to the action of the air. But the fact is often made evident that the oxygen of the air can and does act upon the blood independently of the lungs, and even in the open air. This fact is often witnessed by physicians who bleed their patients; and by others, in the blood which falls on the ground from slaughtered animals. And there are many reasons in support of the belief that the cuticle on the lips, cheeks, &c., of patients who are suffering under the disease called consumption, can and often does become so thin as to permit the oxygen of the air to act upon their blood through it. The probability that such action does take place in persons so situated is strongly supported by the fact that there is but little difference in their arterial and venous blood in the last stages of that disease, both having then the appearance of arterial blood. This subject of the excessive oxydation and decarbonization of the blood of persons suffering under consumption, which seems to be further confirmed by their constant flow of spirits, will be alluded to again, when we come to treat more particularly of that generally fatal state of deranged action in the system.

From the above facts and circumstances we think we may safely conclude that the lungs exercise no other power or influence on the blood, or on the air that is taken into them, to promote the oxydation and decarbonization of the blood, but that of the extreme mechanical division of both, so that every portion of each may come within the range of the attractive influence of some portion of the other.

At each contraction of the right ventricle of the heart, a portion of the dark venous blood, thus extremely divided, comes almost into immediate contact with the air in the lungs, which is also extremely divided.

Atmospheric air being a simple mixture of oxygen and nitrogen gases, and not a chemical union, its oxygen is left free to obey its own laws of attraction, and consequently a union takes place

between the iron of the blood, which had given up its oxygen during the last round of the circulation, and a portion of the oxygen of the air, whilst another portion of the oxygen of the air acts upon the carbon of the blood, and causes the evolution of a quantity of carbonic acid gas from the blood at the next exhalation from the lungs.

The oxygen gas of the air consumed by this process is accounted for by the oxygen contained in the carbonic acid gas which is evolved from the lungs; but as the oxygen gas of the air contained more heat in it than is contained in the carbonic acid gas evolved, there must have been a portion of heat given off to the blood by the process. And fortunately for the advancement of medical science at the present day, general science has advanced so far as to measure with accuracy these portions of heat, and tell the quantity that is given to the blood.

We cannot easily, we believe, too often bring to the minds of our readers the important results which are produced upon the system by the act of breathing. And we think that the impression which will be made upon the minds of all must be, that the extent to which the blood will be oxydized and decarbonized, or, in other words, purified and warmed, must depend upon the quantity of oxygen gas which is brought into contact with it, and that the quantity of oxygen so brought must depend upon the purity and density of the air breathed by the lungs; and consequently that the healthful action of the system of each individual almost entirely depends upon the state of the atmosphere which he breathes.

The blood which has been thus purified and warmed is now taken up by the corresponding small veins which continually unite and form the great pulmonary vein which carries it back to the left auricle of the heart; from which it is driven through the opening of its valve into the left ventricle, whence it started.

There is one deviation from the general arrangement of the vessels, and circulation of the blood in the system, to which we here call the particular attention of our readers. We allude to that part of it which takes place from the stomach, intestines,

spleen, pancreas, &c., the veins of which unite into one, called the vena portæ, which carries the blood from these organs and distributes it in the liver, and from which the bile is secreted. It is again taken up by small veins which unite and form the large vein called the "azygos," which carries the blood into the vena cava.

Here we wish to remind our readers that the object of this peculiarity of the circulation could not have been understood before the nature of atmospheric air, and the effect of breathing it, upon the blood, was known. Hence this peculiarity of the circulation is mentioned by writers on anatomy, but the object of it is not satisfactorily accounted for.

The bile which is secreted by this process is composed almost wholly of carbon, the same substance which is taken from the blood by the process of breathing, and converted into carbonic acid gas. The bile thus secreted goes into the gall bladder, to be used as circumstances may require, to promote digestion, or to assist the other secretions, &c.

We see from this, that the great Author of Life has established two distinct modes of decarbonizing the blood in all warm-blooded animals: the one by the lungs giving off heat to the blood, whilst that by the liver produces none. Thus, life can be supported in all the latitudes of the earth. Did time and space allow, it would give much pleasure to the author to dilate upon the wisdom of this arrangement, and its harmony with the other provisions of the system, by showing that, if all the surplus carbon of the blood had been consumed in the lungs by oxygen gas, more heat would have been evolved to the blood than life in the human system could bear in any climate upon the earth; or, if all had been consumed in the liver, then all would be cold-blooded animals. But by this wise arrangement, as the warmth of the climate increases and the air is more and more expanded, and there is less and less oxygen taken into the lungs at each inhalation, and there is at the same time less and less necessity for the evolution of vital heat to the blood, there is more and more carbon taken from the blood in the form of bile;

whilst, on the other hand, as the climate becomes colder, and the air less expanded by heat, and there is more and more oxygen taken into the lungs at each inhalation, and there is more and more necessity for the evolution of the vital heat to the blood, there will be less and less carbon consumed by the liver, in the form of bile. In this way a healthful state of the system, both as regards the proper point of decarbonization of the blood, and its proper supply of vital heat, is kept up for its perfect development. After we understand these laws of the animal economy properly, very little reflection will enable us to comprehend the causes why individuals moving from cold climates to warm are more liable to deranged action in their systems, such as yellow fever, bilious fever, &c., (diseases which arise from the necessity that then exists for the liver to perform the duty which had before been performed by the lungs,) than those who are accustomed to such climates—why some persons are liable to sudden defluations of bile (bilious cholera morbus) from going into warm rooms, bad air, &c.,—what is meant by the expression, “becoming acclimated, &c.,” and we can then understand also why animals that are amphibious have larger livers than those which live altogether on the land and are air-breathing at all times.

The author has now endeavored to show : 1st, that the human body is a complicated structure of different systems of organs, each of which has its respective duties to perform for the growth of the whole, but that they may assist each other, as the skin may assist the kidneys ; the lungs may assist the liver, &c. 2d, that each organ possesses at different times different degrees of excitability, or the power of being acted upon by stimuli. 3d, that all the vital heat of the system is imparted to its blood in the lungs by the oxygen of the air uniting with the carbon of the blood, and thereby setting free a part of the latent heat of the oxygen gas, which is distributed over the system by the circulation of the blood, by secretion, assimilation, &c. 4th, that the blood of the system is purified of its carbon both by giving up a portion of it to the oxygen of the air in the lungs, and

by a portion of it being secreted in the liver in the form of bile. 5th, that the temperature of the blood for the production of healthful action in the system is always at 98° Fahrenheit's thermometer; and 6th, that action in the heart and arteries (as indicated by the pulse) must be uniformly the same, as to force and frequency, in the same individual, to produce the healthful development of all the organs of the system.

And he hopes and believes that he has brought forward sufficient evidence to prove, to the satisfaction of his readers, that what is called "disease" is nothing more than deranged action in the system, produced by causes which prevent the above-mentioned laws of healthful action being carried out; that deranged action in the system necessarily produces the unhealthful development of its organs; and consequently there is no necessity for the belief, that the Allwise and Good Creator has inflicted upon the young and innocent of his creatures, as well as the old and guilty, a set of specific diseases producing pain, sickness and death.

If it were not for the importance and serious nature of the subject, it would excite a disposition to laughter in every person who has studied the circulation of the blood, and has a knowledge of the number of times it is mixed, divided, and mixed again, in the course of its round through the system, and also of the important effects which are produced upon it by breathing, &c., to read of the great powers given to these things, called "diseases," over the pulse, by writers on the subject, and of the wonderful sagacity of some doctors of medicine in discovering their location, duration, danger, &c., by the pulse.

To show the extent to which this has been, and perhaps is now believed in by many practitioners, we make the following quotation from a work written in the year 1804-5 by A. RICHER-AND, and introduced into the United States by DR. N. CHAPMAN, of the Medical College of Pennsylvania, in the year 1813:

"Since the time of GALEN, the pulse has furnished physicians with one of their principal means of diagnosis. The force, the regularity, the equality of its pulsations, opposed to their weak-

ness, irregularity, and intermittence, afford the means of judging of the nature and danger of the disease, of the power of nature in bringing about a cure, of the organ chiefly affected, of the time and duration or period of complaint, &c. No one has been more successful than BORDEN in the consideration of the pulse under these different points of view. Its modifications, indicative of the periods of disease, establish, according to that celebrated physician, certain general characters, and indicate whether the affection is situated above or below the diaphragm; hence the distinction of superior or inferior pulse. Lastly, peculiar characters denote the lesion of particular organs, which constitute the nasal, guttural, pectoral, stomachic, hepatic, intestinal, renal, uterine, &c." But while we find this extravagant array of powers claimed by this author for diseases over the pulse, we find also, a little above, and on the same page, the following facts stated: "The pulse is more frequent in women, in children, in persons of small stature, during the influence of the passions, and under violent bodily exercise, than in adult men of higher stature, and of a calm, physical, and moral nature. At an early period of life the pulse beats as often as a hundred and forty times a minute; but as the child gets older, the motion of the circulation slackens, and at two years old the pulse beats only a hundred times in the same space of time. At the age of puberty the pulse beats about eighty in a minute; in manhood, seventy-five; and in an old man of sixty, the pulse is not more than sixty. It is slower in the inhabitants of cold, than in those of warm climates, &c." This shows that the author himself believed that the pulse is under the same laws of excitability and stimuli and of forces that govern all other motions of life, whilst our previous quotation from BORDEN, with Dr. CHAPMAN's approval of it, shows plainly, that the members of the allopathic school of medicine (at least up to the year 1813, the time the work was introduced into this country,) looked upon diseases in the same light, and as they supposed they were understood from the time of GALEN, and believed that a disease in the nose, throat, chest, stomach, liver, bowels, kidneys, or

foot, has the power of impressing upon the pulse its location, duration, extent, danger, &c.

Here we find propagated by high authority another of those errors which have served for many ages to mislead the minds of both the people at large and of practitioners of medicine, as to the powers of what are called diseases over the pulse. For no assertion can be more untrue than this: that the pulse indicates whether the disease is situated above or below the diaphragm, which particular organ is affected by it, and how long the disease has lasted, &c., consequently no person can tell by the pulse whether the scalp of the head, or the skin of the foot, is the seat of the inflammation; whether it is situated in the throat, ankle-joint, chest, or kidneys; nor can he tell by the pulse how long the disease has lasted.

If what are called "diseases" really have these powers, the acute and discerning physicians of past times have been very remiss in not leaving to their successors a description of the nose pulse, the chest pulse, the kidney pulse, &c., instead of leaving them only the simply comparative terms of soft, hard, weak, strong, quick, slow, tense, depressed, oppressed, imperceptible pulse, &c.

And yet the pulse, properly understood, gives to an intelligent observer more valuable information than has been heretofore claimed for it. For it indicates with certainty whether the action of the heart and arteries is above or below the healthful standard for the growth and perfect development of the organs of the system; and by its hard, tense, depressed, oppressed, and imperceptible states, shows plainly when there is more blood driven into the arteries by the ventricle of the heart than passes with ease through the small arteries and capillaries into the small veins, and so on to the heart, and consequently produces a fullness of the arteries and a backward pressure of the blood upon the valve of the heart and artery. These states of the pulse are not associated with inflammation or disease in any particular organ of the body, but may attend upon affections of them all.

The consequences which have resulted from such views as those quoted from BORDEN by RICHERAND, and endorsed by CHAPMAN, of the power of diseases to impress upon the pulse their location, duration, danger, &c., being associated with Dr. CULLEN'S Nosology of Diseases, his dividing them into classes, orders, &c., have been to impress still more strongly upon the minds of the people and of practitioners of medicine the individual and substantive character of the things called diseases; and that the proper study of the healing art consists in associating what are called the symptoms of the disease, such as pain, sickness, heat of the skin, appearance of the tongue, state of the pulse, &c., with such remedies as experience has found most certain to cure, or drive the disease from the system. And thus there is associated in the mind of the practitioner the disease of bilious fever, and its remedies; yellow fever, and its remedies; typhus fever, and its remedies; pleurisy, and its remedies; consumption, and its remedies, &c., &c., throughout the whole catalogue. And the act of recommending or discriminating between the several remedies, which is best to cure or drive out of the system the particular disease under which a patient is suffering, constitutes the practice of medicine.

To account for the causes which have served to fix these unfortunate and unphilosophical opinions in the minds of men on this highly important subject, we have only to bear in mind the following facts: that the necessity for the practice of the healing art began in the earliest ages of mankind; that the effects of remedies were handed down from generation to generation, until the arts of writing and printing were discovered, which can only serve to extend errors so long as errors prevail; that the pulse was known to exist, and was associated in the practice of medicine long before the circulation of the blood was understood; that almost all the erroneous opinions which are now entertained on the nature of diseases were formed and promulgated to the world long before the nature of atmospheric air was discovered, and its effects upon the blood through the lungs were known, and of course before the true uses of the lungs in

the animal economy were understood. Unfortunately for the well-being of mankind, there is no profession or trade that men are engaged in, in which its members hold on to the opinions of their predecessors with so much pertinacity as those of the medical schools; and hence, although the above discoveries of the effects upon the blood of breathing atmospheric air have now been made and fully proved for years past, they have caused no change in the opinions of the members of these schools as to the nature of diseases, their causes, or as to the proper means of their removal.

If for some time a man were ignorantly to eat food which had no nutritive matter in it, as soon as he became poor in flesh and weak, he would begin to suspect that there was something wrong about the food; and when he was told that there was no nutritive matter in it, he would readily believe in the truth of what he was told, and understand why he was poor and weak. Now, we would ask,—Why is this willingness of belief, as to what is told him, and his readiness to comprehend the cause of his weakness and loss of flesh, but because he has been told from youth that the food he ate afforded to his body both strength and flesh?

But if this man, whilst strong and fat, becomes sick from breathing impure air, he will never suspect the cause himself, although every breath he breathes should impress upon his mind the great necessity of it, and that some effect is produced upon his system by it which must be produced, or else death will be the immediate consequence. And even when he is told that sickness is caused by breathing impure air, which only allows those indispensable effects to be produced but partially, it is with reluctance that he acquiesces in the truth of what he is told. Now, we will ask,—Why is this reluctance on this man's part to believe in this great and manifest truth, but because, in the first place, he has been taught to look upon what are called "diseases" rather as active *things* than as effects; and in the second place because he has not been taught to know that atmospheric air, through the agency of the lungs, produces effects

upon the blood more indispensably necessary to healthful action in his system than food in his stomach does? For, if he had been so taught, he would have comprehended the cause of his becoming sick from breathing impure air with equal, if not greater facility than he did his becoming poor in flesh and weak from eating food that had no nutritive matter in it.

And so it is with the members of the allopathic school of medicine. They have been taught almost to reverence the errors that have been taught in the schools from age to age, and consequently seem not to dare to admit truths as advancing science develops them, although a slight investigation of the history of medicine must show to every unbiased mind how the errors now influencing the practice of it came to be adopted.

The opinion that the human body has been made subject to certain specific diseases by its Creator was easily conceived by the minds of men, before the laws which govern the motions of matter were at all understood by them; and it having been discovered that the pulse took on different degrees of action when different diseases were affecting the system, whilst as yet the circulation of the blood in the body had not been discovered, it was but natural that the observing practitioner, when any particular organ of the system was supposed to be affected, or any peculiar combination of symptoms took place in sickness, should notice the states of the pulse, and, in his descriptions of such cases, use such expressions as the following,—“Pleurisy, or inflammation of the pleura, is attended by a hard pulse,” “Typhus fever is attended by a tense pulse,” &c., and then go on and describe the other symptoms. This connection with and control of the pulse by the disease was fully believed in by the ancients, although they could not explain how such connection existed, nor whence such control came. And when the circulation of the blood through the system was discovered by HARVEY in the seventeenth century, instead of its serving to disprove this preconceived opinion,—from the fact that the blood from the whole system is mixed in the vena cava, carried to the heart, and thence to the lungs, where it is minutely divided, exposed to

the action of atmospheric air, and again mixed together and carried back to the heart, whence only a very small part if any will flow along the artery, the pulse of which is felt,—served still more to confirm it, because a line of communication was now discovered between the organ affected and the pulse.

In the year 1789, the connection between the pulse and the organs of the system, and the influence of the nervous system upon the action of those organs, being better understood than formerly,—but the real cause of the purity or impurity of the blood, and of its heat, and of course of the causes of all deranged action in the organs of the system, not being then discovered,—it was but natural that such an enterprising man as Dr. CULLEN was, and he, too, placed at the head of the profession, should believe in and adopt the system we have before described as his; but that this system is still upheld by the allopathic schools of medicine, after the great discoveries which have been made in all departments of knowledge, and particularly those which relate to the nature of atmospheric air, to the purification of the blood; the source of heat in the body, &c., and after all other professions and trades which come under their influence have profited by them, is to us truly surprising.

It is true that a few noble and humane men have attempted to expose and do away with some of the errors of this system, but nearly all such attempts have failed. To Dr. BENJ. RUSH, Professor of the Institutes and Practice of Medicine in the University of Pennsylvania, the people are more indebted than to any other individual, for the strenuous exertions he made by his writings, his lectures, and in his practice, to expose and remove many of them. And could Dr. RUSH have enjoyed the benefit of the full discoveries of science, which were in progress in his day, and have since been fully made, we have no doubt but that before this time he and his followers would have fully exposed the fallacies and evil tendencies of the CULLEN system, have placed the causes of deranged action in the system in their proper light, and have pointed out the most rational means of restoring such deranged action to its healthful state. For we

think that it is evident, from the writings of Dr. RUSH, that he was aware of the fact that CULLEN's nosology and classification of diseases, his writings, and those of his followers descriptive of them and their causes, and also of their proper treatment, tended to confirm the belief in the minds of practitioners of medicine and of the people, that diseases are things that have power, will, &c., and have to be cured or driven out of the system by antidotal or specific remedies. In fact, to establish just such a system of medicine as we now have in what is called homeopathy.

In Dr. RUSH's defence of blood-letting, he describes each state of the pulse that in his opinion requires the loss of blood, irrespective of the particular organ affected, or of the name that has been given to what is called the disease. And in his use of medicines, it is evident that he was guided by his knowledge of their effects upon the solids and fluids of the body, and not by any empirical hope or expectation that they would produce some effect upon the disease itself, as is inculcated by the homeopathic doctrine, as it appears is expected of cod-liver oil, and of several other remedies now in high repute by the members of the allopathic schools. No stronger evidence can be given than the administration of these supposed antidotes or specifics by the members of this school, of the evil tendencies of what is taught in them, and of the low estimate in which science is held by them.

But to return to our subject—the pulse. It is true that, owing to the great importance to the whole animal economy of some of the organs of the system, such as the brain, stomach, &c., and to their extensive connection with the heart and arteries by the nerves, these organs, when primarily, and sometimes when only secondarily affected, do exert an influence over the pulse; and it is true, that experience in feeling the pulse, and a knowledge of the influences of these organs over them, is of great benefit in forming a correct opinion of them; but it is not true that the affected organ being above or below the diaphragm gives to the pulse a higher or lower character, or that it imparts to them any peculiar trait or feature. Nor is it

true that the part of the system, or the peculiar organ affected, gives to the pulse any peculiar trait or character by which the part or organ may be known, as is asserted by BORDEN and others.

It must be obvious to every intelligent reader, that the terms used by writers in their descriptions of diseases will not admit of the idea that the states of the pulse are caused by the particular organ affected, or the location of the disease, as quick, slow, weak, strong, soft, hard, tense, oppressed, depressed, &c., which are all comparative with this state in a healthy state of the system, as when a writer says that, in a certain disease, the pulse is quick, he means it is quicker than it is in a healthy state of the system ; when he says the pulse is hard, he means it is harder than in a healthy state of the system, &c. And these states of the pulse show that they can take on, and do take on, every grade between the extremes of quickness and slowness, weakness and strength, fulness and emptiness, which the artery can bear, and still support life.

If we will lay aside all our preconceived opinions of the individuality and specific nature of diseases, and of their power to affect the system, &c., (opinions derived certainly from education, and not from reason,) and come up fairly to the conclusion that what is called disease is and can be nothing more than a change in the action going on in the bloodvessels, which must necessarily make that action either too quick or too slow, too weak or too strong, too soft or too hard, &c., for the healthful development of all parts of the system ; and remember, also, that this change of action in the bloodvessels must have been caused by some change in the stimulating properties of the blood, we shall then come to a correct opinion as to the true nature of disease, and as to the proper means of its removal or cure.

Let us suppose that the healthful condition and growth of the whole system can go on only whilst the pulsations of the heart and arteries are seventy-five in a minute,—the blood moving along the arteries with a force of ten, and equally divided in quantity between the arteries and veins ; and that, by some cause

or causes acting upon the blood, these conditions of the bloodvessels are changed ; that now, the heart and arteries are making a hundred pulsations in a minute, the blood moving along the arteries with a force equal to twenty, and there is a greater quantity of blood in the arteries than there is in the veins. Or, let us change this state of the bloodvessels, and suppose that the number of pulsations of the heart and arteries are reduced to sixty in a minute, the blood moving along the arteries with a force of only five, and that the arteries and veins contain an equal quantity of blood.

It must be evident, we believe, to every candid mind, that if the secretions and excretions and other actions of the organs of the system go on so as to produce the healthful condition and growth of the whole only during the continuance of the first of these states of the bloodvessels, they will certainly not produce these healthful effects whilst the bloodvessels are in either of the latter supposed states, or in any modification of them ; the state of the blood, and its effects upon the bloodvessels, are the causes of all deranged action, or what is called disease in the system.

If, then, it can be made evident, as we shall aim to do in the following pages, that by breathing atmospheric air in different states of purity, in different states of compression, and at different temperatures, and by retaining, by artificial means, too much of the heat in the blood, which is the effect of that breathing, both the state of the blood, and its effects upon the heart and arteries, as shown by the pulse, may be so changed from their healthful state as to cause the two extremes of deranged action in the bloodvessels and condition of the blood supposed above ; and, of course, all grades between them, both of action and condition ; and if to our argument may be added in proof the sufferings of men by yellow fever, plague, &c., evidently from breathing impure air, we cannot see why it is necessary to look for other causes to produce in the human system what is called disease.

We will mention here two kinds of development which become evident to our sight, and therefore cannot deceive, to show to our

readers both the effects of breathing impure air upon the growth of the organs of the system, and the indispensable necessity there is for every person to understand the pulse before they undertake to prescribe for any case, however simple it may appear. We allude, in the first place, to the sudden change that not unfrequently takes place in wounds and even scratches, which were at first doing well, but in a short time take on unhealthful appearances. Now we will venture the assertion, and defy contradiction, that this change cannot take place unless the patient has been breathing impure air, or the temperature of his blood has been raised too high. And we will further say that this change cannot take place without the pulse giving previous warning of its coming on, if examined and properly understood ; and, in the second place, we allude to the formation of what is called " proud-flesh " in ulcers, uncured wounds, &c. This formation we venture to affirm will never take place whilst the action of the pulse is at the healthy standard, and there is nothing done to produce local deranged action. These things, we think, show conclusively that all the developments of the system are under the influence of the state of the blood, and of the action going on in its vessels, from yellow fever, plague, &c., to the formation of proud-flesh in an ulcer ; that there is no such disease independent of and apart from the condition of the blood, and the actions of its vessels ; and that to attempt to practice the healing art by experience, independent of a perfect knowledge of the pulse and its indications, is nothing more than quackery.

Before we can form a distinct and correct idea of the pulse, of the causes that operate upon it, and of its different indications, we must bear in mind the following physiological and anatomical facts :

1. We must recollect that stimulants act upon the system in all imaginable quantities ; that heat is one of these stimulants, perhaps one of the most powerful of all ; and that in the lungs is generated all the heat of the body. And we must recollect also that the principle of excitability, or that principle upon which stimulants act to produce action, is also innate in the system, and

never remains at one quantity, but is always increasing or diminishing in proportion as stimuli have been increased or diminished, and its consequent action has taken place; and therefore that the force or quantity of action which will take place in the system, from the application of a given quantity of stimuli, will depend upon the quantity of stimuli that had just previously been acting upon the system, and the force or quantity of action which had just previously taken place in it.

2. We must bear in mind the anatomy of the heart, arteries, and veins; and remember that each pulsation of the artery is the flow of a jet or wave of blood driven by a contraction of the left ventricle of the heart through a valve into the great artery, the aorta, which courses along that artery, its branches, and minute ramifications, until it reaches the ends of the smallest arteries and capillaries, and, however often it may divide, keeps distinct from the wave or jet that precedes and the one that follows it; and that, when the blood of this wave has reached the junction of the small arteries and capillaries with the veins, it has lost all impelling power from the heart, and the coats of the small arteries and capillaries being nearly as thin as those of the veins, their contractile and impelling power must be very weak, if there be any; and yet the passage of blood from them into the veins must take place, and that too in the vessels on the surfaces of the body, which are more exposed to changes from heat to cold, from moisture to dryness, &c., than the deeper-seated vessels are. It must be evident, therefore, that there is more danger of a languid and obstructed state of the circulation taking place at those places, than at any other throughout the whole round.

After writing the above, the author read the work of the celebrated LIEBIG on animal chemistry, in which he asserts that, "in the capillaries, the blood loses all the oxygen it had received in the lungs, and commences taking up carbonic acid to be carried to the lungs and thrown off." This assertion comes in so strongly in support of the above argument in favor of the obstruction of the circulation at the junction of the capillaries and small arteries with veins, under certain circumstances, that

he was delighted to meet with it. For it must be evident, that if the oxygen of the air unites with the iron of the blood, and gives to it its red color, &c., it acts also as one of the stimulating causes which assist in propelling the blood along the arteries, and may, in fact, be the principal exciting cause of carrying the blood through the capillaries and small arteries into the veins; and, if so, then it must be equally evident that any deficiency of oxygen in the air breathed must become a cause of obstructing the circulation of the blood at this point, and of producing a fulness of the arteries, oppressed and depressed pulse, &c., and, in fact, of causing those diseases (as they are called) which are attended by these circumstances, and which abundant experience has shown are so common where the air breathed is impure.

Let us, then, suppose that a partial obstruction of the circulation of the blood does take place at this point, and see what must be the consequences attending it.

To do this, let us suppose that each wave or jet of blood occupies one-eighth of an inch in the length of the artery, and that the space between each is three-eighths. This would give half an inch of the length of the artery to each pulse, in a healthy state of the circulation. (It may be more or less, but that would have no effect upon the argument, or upon the conclusion.) As soon as the blood fails to pass freely through the capillaries and small arteries into and through the small veins, the space between the waves of blood must begin to lessen, and the waves of blood, or pulse, be brought nearer together. Now let us suppose that from a given amount of obstruction the space between them is reduced from three-eighths, the healthful distance, to two-eighths of an inch. This would distend the artery, and, with an increase of activity of the heart, would cause what is termed a strong, hard, and tense pulse. From this it is evident that if this obstruction of the circulation goes still farther, the blood in the great artery must begin to have a backward pressure upon the valve which suffers it to pass from the ventricle of the heart into the artery; and as that valve opens into the artery, it must serve to close, or at least prevent it from opening with perfect

freedom. Now there must be what is termed an oppressed state of the pulse, and if this backward pressure goes a little farther, there will be a depressed state of it. And if this backward pressure of the blood in the artery goes so far as to be nearly or quite equal to the contractile force of the ventricle of the heart in driving the blood forward into the artery, then the valve will of course open and shut with great irregularity, and perhaps not close at all, and then the pulse must be irregular, and at last indistinct.

We have here ventured to give an explanation of the causes of the above states of the pulse, that we believe to be entirely original and new, as we have never met with such a one in our reading, nor heard one like it suggested orally; but that it is the true one, or very near it, and highly necessary to a proper understanding of the subject, we have no doubt, as every circumstance bearing on the subject we have met with, in many years spent in closely watching and reflecting on it, abundantly proves.

By every person who has been in the habit of feeling his own pulse, or the pulse of others, and has reflected upon the causes of its variation of action, in strength, hardness, tension, oppression, &c., we hope the above explanation will be understood, and that it will be satisfactory to him. But if he could add practice to theory, as the writer of this has done in hundreds of instances, by watching the effects of bleeding upon the pulse, when it is indistinct, or depressed, or oppressed, or tense, or hard, as it is in the different grades of puerperal or child-bed fever, in the different grades of (what is called) typhus fever, pneumonia, pleurisy, rheumatism, small-pox, measles, diarrhoea, &c., and in different grades of inflammation of the liver and other organs, both acute and chronic; and, in fact, in all cases of deranged or diseased action in the system, in which the circulation of the blood is either too languid or is obstructed, where the small arteries and capillaries take on the character of veins—which is the case in almost all diseases (as they are called) that are really dangerous to life—as in almost all inflammatory

cases of disease in which the circulation of the blood can remain free, the system would be able, by the inherent laws given it by its Creator, to relieve itself.

We say if our readers could witness, as we have done, the regular graduation of relief to the obstructed action of the heart and arteries, (as is shown by the pulse,) that results from bleeding, and also by the use of purgative medicines, by lessening the quantity of the fluids of the system,* and feel the pulse becoming first more distinct, then less depressed, next less oppressed, less tense, less hard, &c., and witness at the same time the relief given to the sick in their feelings, their strength, &c., we are confident they would understand and appreciate the subject as we do.

We have before supposed that in a healthy state of the circulation each wave or jet of blood occupies one-eighth of an inch, and the space between them three-eighths of the length of the artery. As these waves or jets of blood, from the continuance of the obstruction, become closer and closer together, they cause the artery to become first hard, then tense; and when they press backward upon the valve between the artery and ventricle of the heart, they cause a difficulty in its opening and closing, and produce what are called oppressed and depressed states of the pulse; and when the circulation is so much obstructed as to cause these waves or jets of blood nearly to touch each other, the pulse becomes indistinct.

The flow of blood from an orifice in a vein would soon stop and the vein be empty (as no blood can come from above), if it were not supplied by the small arteries and capillaries; these now beginning to pass the blood freely, in consequence of the emptiness of the vein, the pressure of the blood upon the sides

* Here we are reminded of the disputes that almost invariably took place between Dr. RUSH and the physicians with whom he had to consult in such cases, on the choice between bleeding and purging; he contending that they purged too much, and they that he bled too much, when, in truth, the end to be gained was the same, which was to relieve the overfulness of the arteries, the principal difference in their two remedies being in point of time, convenience to the patient, &c.

of the arteries, and also upon the valve, is gradually taken off as the bleeding goes on, and the pulse now changes to the healthy state of action just in a reverse order to that in which it left it, by becoming further apart and of course more distinct, by the pressure upon the valve, and upon the sides of the arteries being taken off, and thereby removing the difficulty of opening and shutting the valve and the tension and hardness of the pulse. These effects take place from the same cause; that is, from the quantity of fluid matter in the veins being lessened, whether it is carried off directly by bleeding, by the more indirect way of the secretions and excretions, from the use of purgative medicines, or by the still slower process of starvation.

Here we must again admit that the foregoing explanations of the nature, cause, and removal of hard, tense, oppressed, depressed, and indistinct states of pulse, are wholly our own, as we have never seen them explained either by writers on anatomy, on physiology, or on the practice of medicine, any further than by their supposing that such states of the pulse were the effects of the disease under which the patient was suffering, and that experience had shown that such diseases required bleeding. But of their truth we have no doubt at all.

Unfortunately for the acquisition of that kind of knowledge that is necessary for the maintenance of health, and the relief of the sick, the study of the pulse by the people generally has been heretofore discountenanced by the members of the medical faculty, under the plea that such study would produce apprehension and alarm in the minds of individuals, whilst in truth there is no subject of study in which a man can be engaged, that is better calculated, than the proper study of the pulse, to excite in his mind feelings of gratitude toward his Creator; to relieve it of unnecessary alarms for the present, and fears for the future as to the state of his system; and also to enable him to advise the proper means of relief for his own system and that of his neighbors. By this study we learn the laws given by the Creator to protect our bodies against the effects of causes that otherwise would destroy them; we learn what constitutes healthful

action in our bodies ; and we learn, also, the proper means to be used to restore deranged action in them to the healthy state.

At the present day, all the mechanical arts, the arts of war, of manufactures, and agriculture, have yielded to the advance of science for their own improvement, but it is not so with medicine. This stands as the last fortress of ignorance and superstition against the inroads of scientific improvement, but how much longer it will do so is an interesting question to the philanthropist.

What is called fever heat is looked upon by the members of the medical profession as something different from ordinary heat, and that it is the effect of the disease (not the disease itself) under which the system labors, and consequently that the system can only be relieved by reducing the heat to the healthy point, or 98° , by curing the disease that causes it. This was the opinion of medical men two hundred years ago, and is the opinion of medical men now. Consequently, the idea of removing fever heat (as it is called) from the human body by the same means that are used to take ordinary heat from other bodies,—such as the application of cold air, cold water, &c., to the body, has hardly ever been thought of by them; and when it has, it has been rejected as inconsistent with medical philosophy.

We do not mean to say that cold water, &c., have never been used by graduates of medicine to cure diseases, but we mean to say that they were used by them with the same views that other remedies, such as cod-liver oil, &c., were: as specifics—as something to cure the disease by destroying it, or driving it out of the body, and not as a simple and sure means of abstracting the redundant heat of the blood, the great stimulant to action of both the heart and lungs, and thereby the cause of its own production and accumulation in the blood, and finally the cause of the death of the body, by wearing down its innate excitability so low that the action going on in it is too weak to withstand fermentation and putrefaction in the solids and fluids (called “gangrene” and “mortification” by the schools of medicine), and the consequent death of the body.

There are but two ways by which the heat of the human body can be raised above the healthful standard of 98° , which are, 1st, by increasing the number of respirations by the lungs; and 2d, by preventing the escape of the heat evolved to the blood by breathing, at the surface of the body, by surrounding it with bad conductors of heat, such as warm air, woollen clothing, &c. And so beneficent are the laws of a kind providence, that neither of these will prevent its escape, but for a short time, down to 98° , so long as the blood is at the proper point of decarbonization and oxydation, because the secretions and excretions in the form of perspiration will carry it off down to the healthful standard of 98° . But if, on the contrary, the heat of the blood is raised by either of the above ways above the standard of 98° , and the blood is not in the proper state of decarbonization and oxydation, perspiration will not be free and easy, and consequently heat will be retained in the system, which is fever heat. This heat acts upon the heart and arteries as a stimulant, and indicates its presence and effects by the pulse, which must be understood and appreciated by the practitioner, or else all that he does to relieve a patient of disease is mere guesswork.

The blood of the body being thus liable to states of imperfect decarbonization and oxydation, in consequence of the lungs breathing impure air, and these states of the blood causing the secretions and excretions of the system to go on with less certainty and regularity, and the body being constantly liable, from changes of weather, clothing, exposure, &c., to changes of temperature, whilst its own innate excitability, or power of being acted upon by stimuli, is constantly increasing or diminishing from the effects of a variety of causes, no person should be surprised that the action going on in such a delicate and complicated organization should become deranged; and as there are but few persons whose systems are perfect in all their parts, and equal in their powers, these deranged states of action must take place in different organs, in different states of force, and with different appearances. Nor should one be surprised that to these states of

derangement have been given, under the general designation of "diseases," names by which to distinguish them.

But, unfortunately for the promotion of feelings of gratitude and love in the bosom of the creature toward his Creator for his wonderful creation and protection in life, and for the advancement of the practice of medicine as a science, a system of medicine (if it may be termed a system) has been introduced by the schools which leads to the belief of a kind of fatalism as to life; that if mankind can escape certain traps, snares, and pitfalls set for their destruction by the Creator, they may go on with impunity and breathe any kind of air their lungs will take in. And the people have been taught to believe also that if they learn to feel, and study the philosophy of their own pulse, they will make themselves hypochondriacs, &c.

But after upwards of forty years spent in the study and practice of medicine by the author, so indispensably necessary does he deem a knowledge of the circulation of the blood, and of the indications of the pulse, to every individual to enable him to promote his own health as well as that of others, and so easy does he know it to be to gain this knowledge by a little attention and reflection, when properly directed, that, although he has stated before some of the following facts, he hopes to be excused for bringing them again to the attention of his readers.

The whole system of vessels intended to convey blood for the nourishment and support of the body and all its parts, commences at the heart in one great trunk or artery, called the aorta, which opens from the left ventricle, or cavity of the heart, by a strong valve, to prevent the return of the blood into the ventricle from the contraction of the artery. This valve opens into the cavity of the artery, from which it will at once be perceived, that if there is any backward pressure of the blood from overfulness of the artery with blood, it must to that extent prevent the valve from opening with ease at the next contraction of the ventricle of the heart. This overfulness of the artery with blood, and laboring state of the valve and ventricle, will produce corresponding effects upon the arteries at the wrists, temples, &c., and upon

the pulse, which should at once be perceived and understood by those who feel them.

This great artery, the aorta, divides and subdivides until it supplies with blood every organ, muscle, sinew, bone, &c., of the whole system; and finally spreads over every surface, both internal and external of the whole system.

The blood having reached its final destination through the arteries, and having performed the duties required of it, of nourishing the organs, giving up secretions, &c., as arterial blood, it has now to be carried back to the heart as venous blood. This is done by vessels called absorbents and veins, which by uniting continuously together become larger and larger until they form the one great vein called the "vena cava." This carries it to the right auricle of the heart, from which through another valve it passes into the right ventricle.

Here we must recollect that the blood, on arriving at this point, has not only lost all its stimulating properties derived from its previous exposure to atmospheric air in the lungs, but that it is now mixed with all the impurities that have been taken up by the absorbents and small veins from every part of the system; that if there be a diseased organ, or part of an organ, whether it be bone, muscle, or membrane; or whether it be water, pus, or extravasated blood, it has to be taken up by these absorbing vessels and mixed with the blood, or else there could be no cure. And, added to this, as the blood reaches the right ventricle of the heart, it has the chyle mixed with it, which has been elaborated by the stomach and intestines from everything that has been taken into them under the name of food, whether from the table of the rich man, clothed in purple and fine linen every day, or from the scanty supply of the beggar, clothed in rags, lying on the ground at his gate.

The blood of every human being, on arriving at the right ventricle of the heart, whatever its condition may be, has to be carried to the lungs and exposed to the action of atmospheric air, to be decarbonized and oxydized; and whatever may be the state of that air, whether it is rarified by the lack of atmospheric pres-

sure, as is the case at high elevations, or condensed by an increase of that pressure, as is the case in deep mines; whether it is in high northern or southern latitudes, where it is condensed and purified by cold; or in the temperate climates, and is purified by living and growing vegetation, or rendered impure by the gutters and sewers of populous cities, the decarbonization and oxydation of the blood to the healthful point must be effected by it; or else the remote cause of deranged action (disease) must commence in the blood, unless, as we have before explained, the liver increases its secretion of bile, and thereby carries off the excess of carbon in the blood, and purifies it without the evolution of heat.

But if, under all the above-stated conditions of the blood when it arrives in the lungs, and under all these different states of the air that is breathed into them, the blood is not purified by the air, nor by the liver, and deranged action takes place in the system, then we charge our Creator with having afflicted our bodies with painful and wasting diseases to torment and destroy us. Or at least this is what we have been taught to do and to believe by the allopathic schools of medicine.

But, on the contrary, if we reflect on the nature of action or life in the system as it should be understood since the recent discoveries in chemistry and physiological science, we must feel that, instead of charging our Creator with inflicting painful and wasting diseases upon us, our hearts should be filled with love and gratitude toward a kind and beneficent providence, for having given to the organs of our systems such a range of action as enables them to keep up their healthful development under such a variety of circumstances and changes as the human body has to go through.

And we must see that there must be a limit to this range or power of action, beyond which the organs cannot go and at the same time keep up their healthful development, and that all action beyond this limit will be deranged action, and produce deranged development, or what is called disease. And we must see likewise that this limit of healthful action must be different

in different individuals, owing to their different states of organization, and that that difference of organization produces what are called constitutions, which even are not always affected alike by the same exciting cause, owing to the fact that the blood of the same individual is in different states of decarbonization and oxydation, and the organs of the system in different states of excitability at the time the exciting cause acts upon it.

We have before stated that all writers on diseases use the following terms to describe the pulses which accompany the diseases treated of—*weak, strong, quick, slow, frequent, round, full, hard, tense, oppressed, depressed, and irregular*. And we have heretofore remarked also that the states of the pulse indicated by the terms, *weak, strong, slow, quick, and frequent*, are evidently caused by the condition of the heart itself. If, for instance, the heart is weak in its muscular power, not uncommonly irritable, nor stimulated by more than 98° of heat (the healthful quantity), its contractions will be weak, and of course the pulse will be weak. If the heart is weak and also irritable: that is, easily excited to action by stimuli, its contractions will be weak; but quick and frequent, of course the pulse will be weak, quick and frequent. On the contrary, if the heart is strong in muscular power, but not irritable, and it is not acted on by over 98° of heat, its contractions will be strong, but not quick or frequent. But if the heart is strong and irritable, and it is acted upon by over 98° of heat, its contractions will be strong, and quick, and frequent in proportion to its irritability, and to the quantity of heat acting upon it; and so will the pulse be.

The states of the pulse indicated by the terms, *full, round, hard and tense*, it is equally evident, are caused by the state of the arteries and the blood, independent of the state of the heart, although they act together in almost all cases of deranged action in the system. If the blood passes through the small arteries and capillaries into the veins with perfect ease, the action of the heart may be as rapid as life can bear; it will not overfill the arteries with blood, as is abundantly shown in many states of deranged action in the system. But as soon as the blood fails to

pass into the veins with perfect facility, the above states of the pulse begin to show themselves by the arteries becoming full, round, hard, and tense, in proportion to the state of obstruction and to their own power of contraction.

The states of the pulse expressed by the terms, *oppressed*, *depressed*, and *indistinct*, are caused by the backward pressure of the blood upon the valve that divides the ventricle of the heart and the great artery, the aorta, which causes greater labor to the ventricle to drive the blood through the valve ; and hence what is called “ the rising of the pulse ” from bleeding in certain diseases (as they are called), by which the backward pressure is taken off, and the contraction of the ventricle made easier and more distinct in the pulse. This fact will be more readily understood by the practical engineer than by the physician.

To the serious consideration of the abovementioned causes of the different states of the pulse, we beg the attention of our readers, for the following reasons :

1st. Because those causes place the different states of action of the pulse, and the nature of diseases (as they are called) in different points of view from any they have been placed in before, as far as our knowledge extends.

2d. Because it is from diseases accompanied by these latter states of the pulse, that ninety-nine out of every hundred cases of deaths, or of serious injury to the system, occur.

In fact, it may be said with truth that there is but little danger to life from any fever (as it is called), however sick the patient may appear to be, in which the pulse remains free during its whole course, as the Creator has kindly put it in the power of the organs of the system to bring their actions to the healthful standard in almost all cases in which the causes that produced the derangement were not sufficiently powerful to derange their actions that far.

And 3d. Because we can say, with truth, that since we have understood the indications of the pulse as we now understand them (and have done for the last twenty years), we have had no difficulty in determining, by the pulse, when, and to what extent,

to use the lancet, let the name of the disease be what it may, whether the lancet is recommended in such disease or not by writers ; whether the disease is recent or of long standing, acute or chronic ; whether the patient is young or old ; and whether the quantity of blood to be taken shall extend to half a gallon, or only to half a gill. So likewise with the use of purgative medicines, the pulse governing in all cases both the strength of the medicines to be selected, and the length of time they are to be used. And we can here say, with pleasure and confidence, that the pulse has never deceived us since it has been so understood ; and we have the satisfaction of believing, that, from this cause alone, we have saved many lives in the above-named time. We can further declare, that since we have understood the pulse as we now do, and have attempted to describe it as above, we have never had cause to regret having bled a patient in any case where it should not have been done ; or of failing to bleed where it should have been done ; nor have we ever had cause to regret having carried the bleeding too far, or not far enough, where we have had the entire control of the patient. This was far from being the case under the old plan of determining whether to bleed or not by the name of the disease ; the number of days it had continued, the seat of the pain, &c. Then we sometimes bled when we should not, and sometimes failed to do so when we should have bled ; and then we sometimes took too much, and sometimes too little, to our regret afterwards, and to the injury of our patients. In fact, we can say with truth and sincerity, that since we have adopted our present views respecting the indications of the pulse, and the nature of deranged action in the system (called disease), the practice of the healing art has assumed a different character altogether. Then it was without the guiding-star of principle, confused and uncertain, and beset with doubts and fears, but now it is founded altogether upon principle, upon the unalterable laws of nature, straightforward, and almost as certain as the solution of a mathematical problem.

Not that it is possible for man to save the life of his fellow-

creature after deranged action in his system has gone so far as to destroy its excitability, or its organization; or after its solids and fluids have yielded so far to the laws of fermentation and decay as to be beyond the restorative power of the actions of his system (life), to bring them back to their proper condition. But no person who has not witnessed the fact, can form a proper idea of the extent to which the recuperative power of proper action in the system can go in checking fermentation and decay in its solids and fluids, and in restoring its organs even after portions of them have been destroyed.

The facts are generally known, that a human body may be almost literally torn in pieces, and yet, if the action in the system can be kept at the proper state (that is, without what is called fever), its wounds will soon heal, and be restored to the healthy condition; and so in some cases of what are called diseases, however low the patient may be reduced, if at last proper action in the system can be restored, it will soon regain its health and vigor. But the people at large, and many of the members of the medical profession, have been deluded by the unmeaning expressions,—“the disease is cured,” “the disease has left the patient,” &c.

Here we ask,—What is it that is “cured”? What is it that has left the patient? If these expressions simply mean that the action in the patient’s system has changed from the deranged to the proper or healthy state (and, by the by, if they do not mean this, we are at a loss to know what they do mean), then it is evident that to study the healing art properly, we must learn, first, what causes action in the human system; what amount or force of that action develops it to its greatest state of perfection, and what causes can change it from the proper or healthful to the improper or unhealthful state. And secondly, we must learn how to estimate the force or power of the action that is going on in the system—what are the safest and best means of reducing that action when too fast or too strong, and what are the safest and best means of increasing it when too slow or too weak. To learn these things, let us continue our inquiries as to

the circulation of the blood through the lungs, and as to the effects which are produced on it there.

We have traced the blood through the circulation of nutrition, or what is called the long circulation, and brought it back to the right auricle of the heart, mixed with all the impurities which have been taken up by the absorbent vessels from all parts of the system, and also with the chyle that has just been elaborated from the matters taken into the stomach.

From the right auricle of the heart, this impure blood passes through its valve into the right ventricle, from which it is driven, by its contractile power, through its valve, into the great pulmonary artery, which carries it to, and distributes it throughout the lungs, where, by air-cells, it is brought nearly in contact with, and is operated upon by the oxygen of the air of the atmosphere.

Atmospheric air in its purest state has never more than 25 per cent. of oxygen in a given volume. Now, let us imagine for a moment some of the situations in which individuals must be placed by their various conditions in life, and see if it be probable that those indispensable effects of decarbonization, oxydation, and warming the blood, can always be effected to the healthy point. In this imagined view, we shall see some individuals confined to close and warm rooms, surrounded by and breathing impure and stagnant air, which is also greatly rarefied, with their bodies wrapped in flannels, or other non-conductors of heat, and the excitability of their systems worn down by the stimulating effects both of external and internal heat. Some we shall see exposed to extreme cold, with scarcely clothing enough to hide their nakedness, with the air they are breathing condensed and purified, and the excitability of their systems raised to the highest degree, from the absence of the stimulus of heat to wear it down. Some again are resting in the shade and fanned by pure and gentle breezes, with not a muscle of their bodies in motion to wear down excitability; whilst others are exposed to the noon-day sun, with the temperature of the air they are breathing, and which surrounds their bodies, raised to the same degree of heat with their own blood, and highly rare-

fied ; whilst at the same time it is mixed with all the exhalations that can be raised into the gaseous state by 100° of heat ; and these individuals may have to labor whilst thus surrounded, until the excitability of their systems are exhausted. But even this is not all the human system has to bear, for owing to the uncertainty of all earthly things, the situations of these individuals may, in the course of a very short time, be changed to situations almost the reverse of those they were in before, and yet the above-described effects upon the blood of each must be effected perfectly by breathing ; or else, a disposition to deranged action (disease) in the system must be the consequence.

Here we see that, so various and opposite are the situations in which human bodies are placed by their different conditions in life, that no person, simply by an effort of his reason, would suppose that life and health could be supported, by breathing under them, if experience had not abundantly demonstrated the contrary ; and demonstrated also that, so perfect is the work of Almighty Goodness and Wisdom, millions of his creatures go through these extreme situations every year, and yet the actions of their systems remain in the healthy state. In fact, so seldom does the action in the human system become deranged, even from these extreme changes, that men, being ignorant of the goodness of the Creator, and of the wisdom and perfection of his laws, have given particular names to such derangements of action when they do occur, agreeably to their symptoms, location, &c., under the general appellation of "diseases" ; and look upon them as special dispensations of the Creator to punish or destroy his creatures. They believe also that the same Creator who has caused those diseases to exist, has created likewise antidotes and remedial agents, to be used for their removal or destruction, which it is the duty of the practitioner of the healing art to find out and to apply. Can ingratitude and superstition toward so wise and good a Creator go much further ?

We have before stated that a failure on the part of the air breathed by the lungs to decarbonize and oxydize the blood properly, is not an immediate nor an exciting cause of deranged

(diseased) action in the system, but that it becomes a predisposing cause, by rendering the secretions and excretions much less certain and efficient in keeping the fluids of the system at the proper quantity for its use, and the heat of the blood down to 98° , any increase of which above that degree becoming the exciting and immediate cause of deranged action ("disease") in the system.

And we have stated also that the Creator, in his goodness and wisdom, has given to the organs of the system certain ranges or sympathies of action, by which they may and often do relieve each other; and by which the whole system is often relieved. As, for instance: the liver assists in decarbonizing the blood when the lungs, from the state of the air breathed, fail to perform that duty properly. Hence, the beneficial effects of calomel (taught by experience) in what are called bilious fevers, jaundice, &c. The kidneys carry off an increased quantity of urine when the skin fails to relieve the bloodvessels of a plethora by perspiration, &c.

In this way (so perfect is the human system, and so wise the laws by which it is governed,) the organization keeps up a healthy state of action through all the above-described changes of circumstances and situations generally; but owing to man's love of self-indulgence, to the influence of habit, and what is called fashion, and more particularly to his ignorance of the laws that govern the action going on in his system, that action becomes changed from the healthy state, and deranged action and deranged development, or what is called "disease," is the consequence, which ends either in the restoration of healthful action and healthful development, or in the destruction of the system.

But, unfortunately for the advancement of the healing art toward improvement, what are in truth but symptoms or effects of deranged action in the bloodvessels of the system, are called and treated as diseases which are to be cured. As, for instance, when a patient has an inflamed hand, eye, liver, lung, foot, or toothache, it is said his disease is an inflamed hand, eye, liver, lung, foot, or the toothache; and so with other symptoms,

such as sick stomach, pain, &c. These are all the effects of the same cause, which is deranged action in the bloodvessels, either above or below the healthy point. And the practitioner who undertakes to cure (as it is called) either of them, without first changing the deranged action of the bloodvessels to the healthy state (as indicated by the pulse) is undertaking an impossibility, and at the same time imposing upon the credulity of the patient. On the other hand, if that deranged action in the bloodvessels changes from any cause, either natural or artificial, and comes right (which will also be indicated by the pulse), he will find it equally as hard a matter to keep up the inflammation, sick stomach, pain, or toothache, as he had done before to cure it.

Here we will venture the assertion, and fear no successful contradiction, that no person has ever seen, or will hereafter see, any "disease," as it is called, either internal or external, of the body, which was not or is not caused by the action of the bloodvessels being either above or below the healthy point. Nor has he ever seen a case in which the organs of the system did not attempt to restore themselves to their proper condition as soon as the action of the bloodvessels was restored to its proper state. We will further say that these different conditions of action in the bloodvessels are always discoverable in the pulse, by those who have given to the subject a proper share of attention.

Where, then, we will ask, is the true disease to be found under which the patient labors? In the pulse. What is the object the practitioner of medicine should always keep in view, by which to determine what should be done to relieve the patient? The pulse.

We have stated before that all air-breathing, warm-blooded animals have in their hearts four cavities, two of which are called auricles, and two ventricles; that the auricles receive the blood—the one called the left, from the lungs; and the one called the right, from all other parts of the system; and the ventricles receive it from their corresponding auricles. We have stated also that each of these auricles and ventricles have valves to prevent the blood returning into them after it has been ejected.

Thus we see that the circulation is guarded at this point by four strong valves, one of which being placed between each auricle and its corresponding ventricle, and one between each ventricle and its corresponding artery; and one of these arteries transmits the blood to the lungs, and the other to all the rest of the system.

From this arrangement it must be clearly understood that the two auricles contract on the blood that is in them, and at the same time their valves open and suffer it to pass into the ventricles. As soon as the ventricles have received as much blood as its stimulating nature will allow—which, by the by, often changes in this respect, as the heat of the blood is one of its principal causes of stimulation (which is shown by the pulse)—they contract on it. The valve between the ventricle and auricle having closed, and the one between the ventricle and artery being now open, that contraction forces the jet or wave of blood into the artery, which is the cause of the pulse. These facts, and the one before alluded to—of the blood, from its imperfect oxydation and decarbonization, sometimes not passing freely from the small arteries and capillaries into the small veins, and thereby producing a backward pressure upon the valve between the artery and ventricle of the heart—must be properly understood by us, and kept constantly in view, or else we cannot understand the true nature of the pulse, nor be able to account for the changes which take place in it; but when we have made ourselves acquainted with these influencing causes of the pulse, then the slightest variation in its action becomes plain and simple to our comprehension.

Nor is this all. For as soon as an individual has made himself acquainted with the true nature of the pulse, and the causes of its variation of action, his views of the practice of the healing art must and will undergo a change from any opinion he had previously formed from the teachings of the schools, &c., as to the nature and cure of what are called “diseases.” That change must be for the better; for we should as soon expect, if we were to carry a watch, which did not keep time, to a

watchmaker who we knew understood his trade properly, to hear him say without inquiry, whether it ran too fast or too slow,—“ Well, let us make this watch run faster ; perhaps that will make it keep time ”—as to hear of a practitioner of medicine, who properly understood the pulse and its indications, using or advising depleting and weakening remedies in cases in which he should have used stimulating and strengthening ones ; or otherwise, using stimulating remedies in cases in which he should have used depleting ones. Or, to hear of such a practitioner undertaking the cure of diseases of any kind without first ascertaining by the pulse the nature of the deranged action that is going on in the system, and the extent to which it deviates from the healthy state of action. Not that a watchmaker, or a practitioner of medicine, thus properly informed, would be certain, by what he did or advised, to make the watch run exactly right, or the sick be entirely relieved ; but whatever was done by either would cause, in the action of the watch, and in that of the human system, an approximation toward the proper state of action, and certainly no harm would be done. Whilst, on the other hand, if a person without the proper knowledge of the mechanical construction of the watch, and its causes of motion ; or one who knows nothing more of the structure, and of the uses of the organs of the far more complicated human body—of the source of heat to and of the means of purifying its blood, of the effects of heat upon the action of its heart and arteries as indicated by the pulse, &c.—than has heretofore been taught in the schools of medicine, or by the books published treating of the cure of what are called “ diseases ”—both of such persons are as liable to do and to advise what is wrong as what is right, and to do harm as often as to do good. Such is the experience of the people at the present day, and hence they are often changing their medical advisers from allopathists to homoeopathists, and from these to hydropathists, and finally seeking in medicine-shops for specific remedies to relieve themselves of the causes of their sufferings.

We have before mentioned, to prove the necessity of properly

understanding the pulse and its indications, that by the use of the apparently simple remedy of bathing the feet and legs of patients in warm water, who are but little unwell at the time, many become much worse in a short time after it is done. In such cases, after the deed is done, it is much more pleasant for the practitioner to believe, and for him to induce the patient and his friends to do so likewise, that the increased sickness is the effect of some metaphysical something in the patient's system, which had the power of determining him to become worse, than it is to admit that the laws of healthful action had been violated, and the action of the system had been made to deviate farther from the proper standard by the effects of the remedy used. Hence we read and hear so much about the violence of the disease, the insidiousness of the disease, &c. ; but we will venture to say that no such occurrences as these will happen in the practice of one who is properly acquainted with the pulse and its indications. The causes of these effects we shall now endeavor to demonstrate to our readers.

It is evident, from the foregoing descriptions of the passage of the blood through the heart, that the whole quantity which passes through the pulmonary artery (or artery of the lungs) into the left auricle of the heart, with whatever degree of heat it may have acquired in the lungs by decarbonization and oxydation—which is one of the greatest stimulants to action the heart can receive—has to be driven through the valve between the auricle and the ventricle into the ventricle, and from thence through the valve between the ventricle and artery into the great artery, the aorta. The arteries, the pulsations of which are felt at the wrists, in the neck, temples, &c., are branches of this great one, and of course partake in all the changes produced in the action of the heart and in the great artery.

We must here beg of our readers to excuse what may appear to some as useless repetition upon this highly important subject. We hope our apology will be found in the great importance of the subject, our great desire to place it in a plain and comprehensible light, and its present obscurity, in consequence of the

fact that all writers heretofore upon diseases and their treatment have expressed themselves as though the deranged state of the pulse from the healthful standard was the effect of the disease, instead of its being the disease itself; and consequently that the disease has to be removed before the pulse can come back to the healthful standard of action, instead of their showing that to bring the action of the pulse to the proper state and keeping it so, is the only way of curing the disease. As, for instance, a person's eye becomes affected, which results in a cataract, a thickening of its humors, or any other of the six hundred distinct diseases lately discovered by a French surgeon; or one of his bones is broken, and a high state of inflammation and suppuration or mortification follows; or any other accident happens, and results in what is called "disease," and a practitioner of medicine is called in. Now, a contest begins between him and the disease, and he attacks it with his poultices, lotions, cuppings, leechings, &c., without perhaps ever thinking of or examining the pulse; and if he does, and finds it deranged in its action, that derangement is at once attributed to the "disease"; but if he finds it very much deranged, then possibly he may do something with the view of bringing it nearer to the healthy state; but still his main object is to cure the disease, under the impression, that the pulse will come right after the disease is cured; and without his ever thinking for a moment, that what he is combating as "the disease," is the natural development of the deranged action going on in the heart and bloodvessels; which development must continue so long as that deranged action continues, that has been made, by a wise and good Creator, so plain and manifest in the pulse, but which will surely cease as soon as that action has been brought to a healthy state. The inflamed eye, hand, liver, lungs, eruptions of the skin, coughs, dropsies, &c., are but symptoms of deranged action in the heart and bloodvessels, and not original somethings called "diseases," as the people have been taught to believe they are.

The author will here make the apparently bold assertion, and defy successful contradiction, that no such "disease" ever

did commence whilst the pulse was in a proper state of action ; nor did any such ever go on increasing, after the action of the heart and bloodvessels, as indicated by the pulse, was brought to and remained at the proper and healthful state.

If these positions be true, which the experience of the author for the last twenty years serves to confirm (and he believes that no person, after mature reflection, will deny their truth), then how unfortunate, for the health and lives of the people, has been and is now the doctrine of individual diseases, as inculcated and practiced upon by lecturers, writers, and practitioners of medicine, in taking what are merely symptoms and developed effects of deranged action in the heart and bloodvessels for the true disease, and trying to cure by remedies these effects, whilst the true disease is left to operate upon the system, or some of its organs ; and hence we hear so much of incurable diseases, of relapses, and of diseases breaking out in new places, after they had been cured at their old ones, &c.

Now let us see if the terms used by writers to express the different states of the pulse in all diseases treated of by them are not meant as comparative with the state of the pulse in the healthy state of the system. As, for instance, when they treat of certain diseases, and say this disease is attended by a weak, strong, or hard pulse, &c., they mean that the pulse is caused by that disease to be weaker, stronger, or harder than it is in the healthy condition of the system. And let us see also if, by these expressions, these writers are not leading their readers into the erroneous and truly unfortunate belief, that it is this "disease" they have to attack and cure by their remedies, before the pulse, whether too weak, or too strong, &c., can again resume its healthy state. We call the inculcation of this belief "erroneous and truly unfortunate," because it leads the mind of the reader entirely away from the object on which it should be fixed, and renders useless his knowledge of the effects of remedial agents upon the system itself. As, for instance, a chill and fever, heat and eruptions, or blotches on the skin, an inflamed eye, throat, lungs, &c., a cough, with expectoration of matter, an effusion

of water in the cellular membrane, &c., &c., is called the "disease" which has to be cured. How easily the mind of the reader, when perusing these things, or looking at the patient who is suffering from them, passes from the real objects it should keep in view, which are, the temperature of the system, and the state of action in the lungs, heart, bloodvessels, &c., and fixes itself upon the one prominent idea, "the disease;" and the inquiry follows—"What will cure it?" when, in truth, the chill and fever, as well as the other states of deranged action (diseases) mentioned above, and all others, may depend upon opposite states of deranged action of the heart and bloodvessels. One case of chill and fever may require the loss of much blood, even during the continuance of the chill, to save the life of the patient; whereas, another, and that, too, similar, as far as the eye can discover, may require the prompt use of the most powerful stimulants to do the same thing. And so it may be with cases of heat and eruptions or blotches on the skin, with inflammation of the throat, eyes, &c., with coughs, dropsies, and all other symptoms of deranged action in the system, called "diseases." And yet we are told by these writers that diseases are so regular in their symptoms and character, that they will bear being arranged into classes, orders, &c.

We have before explained that the right auricle of the heart, with the veins from all the rest of the system, except the lungs, and the left auricle, connected with the veins of the lungs, form two suction or drawing pumps; that the two ventricles, the right connected with the valve, and the artery of the lungs, and the left connected with the valve and the artery, for the rest of the system, form two forcing pumps, which altogether carry on the circulation of the blood, and are kept in action by atmospheric pressure, by the heat of the blood, and other stimulating properties given to it by the oxygen of the air breathed by the lungs; that the pulse is the impression produced upon the arteries by each jet or wave of blood that is ejected by the left ventricle through its valve, as it passes along their cavities; and that all the different kinds of pulse—caused by different de-

degrees of purity of the blood, owing to there being more or less oxygen in the air breathed, and also by there being different degrees of heat in the blood, &c., instead of being caused by diseases, as inculcated by writers—are the following: weak, strong, slow, quick, frequent, soft, round, full, hard, tense, oppressed, depressed, remitting, intermitting, and indistinct, besides the healthy pulse, thus showing fifteen different characteristics in the deranged, by which they may be known from the healthy state of the pulse. The first ten of these characteristics, if treated negatively, show what constitutes a healthy pulse; that is, it should neither be too strong, nor too weak; too slow nor too quick, too hard nor too soft, nor too full, but yet full enough, &c. They show also, as we have before stated, that these terms, when used by writers, are meant as comparative with the healthy state of the pulse. The other five characteristics of the pulse are caused by the backward pressure of the blood upon the valve between the left ventricle of the heart and the great artery, as we have before explained.

A very little reflection upon these fifteen characteristics of the pulse, we think, must show to every one that its weak, strong, quick, slow, and frequent states, depend entirely upon the state of the heart itself, as to its weakness, strength, irritability, &c.; that its soft, round, full, hard, and tense states depend upon the condition of the artery, and somewhat upon the strength or weakness of the heart; but principally upon the facility with which the blood passes through the small arteries and capillaries into the veins, and thereby causing the arteries to be partially empty or over full, and, of course, its softness, hardness, fulness, and tension; and that the oppressed, depressed, intermitting and remitting states of the pulse depend upon the backward pressure upon the valve, between the ventricle and artery, by the blood, as before described. Here it must be observed, that this condition of the valve and artery may be attended by either a weak or a strong state of action of the heart, and that, as the action of the heart is stronger and stronger, so is the danger increased of inflammation in the organs, rupture of the arteries, and destruction of life.

Here the author will remark that some of the most unpleasant feelings he has ever experienced have been caused by his meeting with persons who were becoming blind, partially paralytic, or disposed to apoplexy, &c., from these states of the pulse, caused, perhaps, by their wearing flannel, or some other bad conductor of heat, and thereby retaining it in their blood, (which is one of the greatest stimulants to the action of the heart and bloodvessels,) or by sleeping in badly-ventilated rooms, the air of which had been in a great measure deprived of its oxygen, &c., and they were following, by advice, a course of active tonic medicines, such as bitters, &c., and using stimulating eye-washes, exercise, &c., thus doing all they could to hasten the derangements of the organs of their systems to their worst results. Whereas, if the temperature of their blood had been brought to the healthy point of 98° , by leaving off their flannel clothing, and by the use of cold water, by sponging the body, or in any other convenient way; if the action of the heart had been reduced to the proper degree of strength by occasional bleeding (if found necessary after the excess of heat had been removed), and if the secretions and excretions of the system had been kept right by the occasional use of mild purgative medicines, the author feels himself justified in saying, by his experience of many years past, that this restored action of the system would have restored derangements of its organs (called "diseases"), just as certainly as it is that the wise Creator has given laws to matter, provided that the derangement of the organs had not gone so far as to overcome the recuperative powers of the laws of life.

Oh! if the people at large could only know the truth of this all-important subject, and be induced to study their own and their families' pulse, which is the only safe and true guide to health, and which has been placed by a wise Creator, for kind and benevolent purposes, so perfectly within the reach of the sense of touch of every one, they would thereby save themselves and their families from nine-tenths of the pain and suffering they now have to endure.

To expect that the schools of medicine, or individual practitioners, will forsake their idols (diseases) and what they look upon as accumulated experience, from the time of GALEN to the present, which together give an excuse for the establishment of a system of medicine that is equally convenient to the lecturer and to the student, and which, unfortunately for the people, the weakest mind may believe it understands, but the strongest cannot comprehend, is expecting too much. The people therefore must take advantage of a knowledge of the pulse, and of the recent discoveries of science, and apply them to the elucidation of life, and to what causes the healthful or deranged development of the organs of the systems; and thereby force those who may hereafter profess to practice the healing art, and take charge of the lives of others, to study their subject in a way more in accordance with scientific truths, and with the indications of the pulse.

By studying the actions of the heart and bloodvessels, and the causes of those actions, we discover that the auricles of the heart draw the blood along the veins by causing a tendency to a vacuum, just in the same way that an ordinary suction-pump draws water or other fluids; and that its ventricles force the blood along the arteries in the same way that forcing-pumps force water along the hose of a fire-engine, &c. And we discover also that this power of the ventricles is assisted by the contractile power of the arteries being put into action by the stimulating properties given to the blood in its decarbonization, by the oxydation of its iron, and by the increased quantity of heat imparted in the decomposition of atmospheric air in the lungs. But this is not all that we must discover by studying the mechanical arrangements of the heart and bloodvessels, and the stimulating causes of their actions; for we must see also that the weakest point of both meet at the same place, which is at the junction of the small arteries and capillaries with the veins. For at this point the forcing power of the ventricles is lost, the suction or drawing power of the auricles is least exerted; and by the time the blood of the arteries has reached this point, its stimulating

properties caused by breathing are exhausted, unless the air breathed was sufficiently pure to give to the blood its full power of stimulation.

This point of weakness in carrying on the circulation of the blood is not of itself a cause of deranged action in the human system, as the continuance of healthful action in it, under the great variety of circumstances in which the body is placed, abundantly shows. But when the air breathed by the lungs is not sufficiently pure to carry out the great objects of breathing, viz., to decarbonize the blood to the proper point, to oxydize the iron of the blood properly, and to give to the blood its necessary quantity of heat, and other stimulating qualities, then it is, that a deficient force of circulation takes place at this point, and that the blood, from necessity, begins to fill back in the arteries, and press upon the valve, and gives to the arteries, as is shown in the pulse, the characteristics of hardness, tenseness, oppression, depression, &c., and produces in the patient that sensation of muscular weakness, which is so often and so fatally taken for real weakness arising from an exhausted state of the system.

The state of backward pressure of the blood may and often does occur, more or less, and that too with and without what is termed "fever" in every "disease" (as it is called) mentioned in the nomenclatures of the schools, from an abscess or simple sore to the worst that are named, and all others that can occur, whilst many of them are caused by high or low action in the bloodvessels without it. This difference causes the great difficulty in the practice of the healing art, and shows that a practitioner of medicine, without a thorough knowledge of the pulse, is as bad off as a mariner on an unknown sea, without a chart or compass to guide him, with only this difference: the mariner is risking his own life, whilst the practitioner is only risking that of another.

The action of the pulse, its causes, and indications, should be well understood by the reader. To remind him of what has been already said upon this subject may not be unnecessary.

It is agreed among physiologists that, as a general rule, from

eighty to eighty-five pulsations of the heart and arteries, and from twenty to twenty-three breathings of the lungs are necessary to the support of healthful action in the system of persons just arrived at mature growth; and that both have gradually diminished in number from infancy, and will continue to do so as life advances. But it is known that in every individual these numbers vary to suit the peculiar organism of each, while it is a universally admitted fact that the temperature of the blood of every one must be maintained at 98° of Fahrenheit, or else deranged action in the bloodvessels, and disordered development of the organs (called "disease"), must be the consequence. These positions being admitted, and its being known that all the heat of the blood is derived from breathing, and its equal diffusion over the system, dependent upon the free circulation of the blood, it becomes a matter of serious importance to each individual that he should understand the subject, and thereby be prepared to preserve his own health.

At each contraction of the left ventricle of the heart, (as we have already stated,) the blood that is in it is forced through the valve into the artery, and remains separate and distinct from that which precedes and follows it, passing in this state through the whole length of the arteries, which is the cause of the distinctness of the pulse in a healthy state of the system.

If these waves or jets of blood pass freely from the valve through their whole course into the veins, where they lose their distinctive character, they indicate the combined force of the ventricle and artery, the time the wave of blood takes to pass under the finger of the observer, and the distance between each wave or jet.

The number of contractions of the ventricle, and of course of the pulse, are generally (as already remarked) about eighty or eighty-five in a minute in an adult in good health, but each individual has a specific number of pulsations in that time to cause the healthy development of his own system.

The quantity of blood driven into the artery by the ventricle in a healthy state of the system is just enough to give to the

observer's finger the sensations of moderate fullness and roundness, and should pass on, leaving the artery perfectly empty. Now, let us suppose that one of these waves occupies in the length of the artery one-eighth of an inch, and that the distance between them is equal to three-eighths; then each wave and space would take half an inch. Now, if any obstruction takes place in the passage of the blood through the smaller arteries and capillaries into the veins, and the number of contractions of the ventricle continues the same as in the healthy state, it must be evident that there will be one more wave of blood between the ventricle and the place of obstruction for every minute that such obstruction has continued; and there must be a deficiency in the quantity of blood, to the same extent, between the place of obstruction and the auricle of the heart which should receive it. If this be so, (and we think that no one will deny it,) as soon as the obstruction begins, the distance between the waves of blood in the healthy state of the system must go on diminishing in proportion to the degree of obstruction, and the waves must come nearer to each other. This gives to the artery more and more fullness and roundness; and if there is now some increase of activity and strength in the action of the heart (called "fever" by the schools), which may be caused wholly by an increase of heat in the blood, then we shall have explained the four kinds of pulse mentioned by writers as resulting from disease—full, round, hard, and tense. If the obstruction still becomes greater, or the action of the heart more excited, by heat or other stimulus, causing the crowding in of more and more waves or jets of blood between the point of obstruction and the valve between the ventricle and artery, the full play of the valve will first be prevented, and finally be made to stand open, the arteries themselves, from the stimulus of distention, become inflamed, and the pulse oppressed, depressed, irregular and indistinct.

Thus we see that breathing impure air, or that which is so far deprived of its oxygen as not to be capable of properly decarbonizing the blood, and the retention of heat in the blood

beyond the healthy degree of 98, are the true causes of the states of the pulse which have been heretofore attributed by writers to the effects of those mysterious things called "diseases;" and which, they suppose, must be cured before the pulse can become right again.

In proof of the truth of these positions, we refer the reader to the use of any mechanical contrivance by which the ventricle and valve of the heart, the artery, and the blood, can be represented. We have before said that the ventricle, valve, and artery, with the blood, are similar to a forcing-pump. Let him then take a common forcing fire-engine and hose, and he will find, upon trying it, that so long as the water, which passes through the valve into the hose, also passes off freely at the other end of the hose, it will be impossible to distend the sides of the hose so as to produce the feeling of tension, however great the power may be which is used in working the piston. But if he will now diminish the size of the discharging aperture, and keep up the strokes of the piston, a healthy tension (comparatively of course) of the sides of the hose will soon be produced, which may be kept up at pleasure, and each stroke of the piston-rod may be distinctly felt at any part of the hose. And next, let him diminish the size of the discharging aperture one-half, while the action of the piston is kept up to what it was before; he will now find that the sides of the hose will increase in fulness, roundness, hardness, and tension; at each part of the hose the strokes of the piston will be felt less and less distinctly, and after a few more strokes the valve will perform its duty uncertainly and indistinctly, and in a short time cease to be felt altogether.

This, although a comparison between an animate and an inanimate piece of mechanism, holds good so far as their mechanical actions are concerned. When the hose is distended, so that the action of the piston and valve can scarcely be felt, let a puncture be made in the hose similar to that made by a lancet in a vein or artery, or let the discharge from the hose be increased, so as slowly to overcome the quantity forced in by

the piston, to represent an increase of the secretions and excretions from the use of purgative medicines in the human body ; or let the forcing power of the piston be diminished a little below what it was, whilst the discharge continues the same, to represent diminished power of action of the heart, no matter which ; as far as the comparison can go, it will still hold good. For, as soon as the quantity of fluid is diminished by these means, either in the living artery or in the hose of an engine, the contractions of the ventricle and the action of the piston will become apparently further apart, and more distinct. The feeling of the artery as well as that of the hose will become less and less tense, less and less hard, and less and less full, round, &c., until the power of the piston and that of the discharging aperture become equal. So with the heart and the discharge through the small arteries and capillaries into the veins ; the full power of the piston, as well as that of the ventricle, will be distinctly felt.

We appeal to the experience of every man who has bled a patient with a depressed state of pulse, and ask, if his experience has not taught him that, as soon as a sufficient quantity of blood has been taken to produce an effect upon the heart and arteries, the first evidence of such effect was, the pulse seemed to become further and further apart, and more and more distinct. If the bleeding is continued in such cases the development of the pulse will go on until it becomes free and hard, the very point at which ordinary judges of the pulse would say,—“ The patient should be bled ;” and the bleeding should continue on until the pulse becomes soft and weak enough for health.

Unfortunately for the progress of the healing art as a science, and for the ability of men to relieve each other, a belief in the existence of individual and specific diseases—some of which have the power of controlling the pulse, and in which the pulse (although really weak and soft,) may, and will sometimes become strong and hard from bleeding—has prevailed in the minds of members of the schools. This belief is one of the greatest misfortunes that has ever befallen the practice of the healing art ; for

no case of sickness ever has occurred, or can occur, in which a soft and weak pulse has changed, by bleeding, into a hard and strong one. But under this belief many practitioners have bled their patients indiscriminately, yet instead of the pulse becoming stronger, it becomes weaker, the patient worse, and probably dies. This practice has prevailed until there is among the people almost a panic against bleeding, the only safe and sure remedy by which life can be saved in all cases of deranged action (disease) in which the pulse is tense, oppressed, depressed, indistinct, &c. Both this fear of bleeding and the absolute necessity for it, were strongly shown in the language we have before quoted, in which the author, treating of puerperal fever, (which is invariably attended in its first stages by a tense, oppressed, or depressed pulse,) says,—“Whenever I ventured to take a large quantity of blood my patients invariably recovered, but when I did not they as invariably died.”

If we judge of the practice of medicine in general by the language of this writer, it would seem to be a matter of mere guesswork, or rather of courage, in the practitioner, to take the responsibility, not upon any fixed principles as to the nature of the deranged action (disease) to be overcome, nor as to the effects of the remedy to be used. But this is not at all the case with the practitioner after he has made himself fully acquainted with what constitutes healthful action in the system, with the laws that govern the pulse, and their indications. For then his views wholly change as to the nature of diseases, and the effects of advised remedies; he loses all apprehension of going wrong from the considerations that before influenced him. Formerly, he was influenced in his choice of remedies by the name previously given to the assemblage of symptoms before him (the disease); by the number of days it had continued; by the kinds and quantities of remedies used, and by the probability of what is called a “crisis in the disease taking place,” &c. But now he knows, and knows with certainty, because the pulse cannot err, that whether the disease be called “intermittent,” “remittent,” “bilious,” “typhus,” “nervous” or “yellow fever”; whether

it be called "pleurisy," "rheumatism," an "abscess," or a "boil," &c. ; whether it has continued one day or ten days, and whether twenty remedies, or none at all, have been used, it is his first duty to examine with care and deliberation into the state of arterial action going on in the system, as indicated by the pulse. If he finds it to indicate indistinctness, depression, oppression, tenseness, or hardness, it is his next duty to relieve such a state of action, and that too by remedies which are equal in power to the extent to which the action in the pulse has arisen in force and strength above the healthful standard, and will exert that power as surely as fire will warm and ice cool all bodies of lower or higher temperature brought into contact with them.

CHAPTER III.

HEALTHY STATE OF THE PULSE—CAUSES WHICH PRODUCE, DERANGE, AND DESTROY IT.—OCCASIONAL REMARKS ON THE PRESENT CONDITION AND PRACTICE OF THE HEALING ART.

WE have already given the terms used to express the different pulses as they accompany different diseases; and also such explanations as forty years' experience and observation have taught us to be true, both as regards the heart and the state of the blood, and the arteries and the state of the blood; and where combinations of those terms are used to express the state of the heart and the arteries with the state of the blood.

The author is well aware that in giving these explanations, he is deviating very far from the path which has heretofore been trodden by others, but he feels no apprehension on that account; for he is certain that, whilst he has reason, experience, and the lights of science to guide him, he cannot wander far from the objects he is aiming at: truth, and the amelioration, as regards sickness and suffering, of his fellow-creatures. He promises his readers that, as soon as these guides fail him, he will give up the subject, as he is well aware that, in pursuing it, he has to combat many errors which ages of superstition, prejudice, and ignorance have almost rendered sacred. The term "ignorance" is used wholly in reference to the great discoveries which have been made in modern times upon the subjects of atmospheric air, the uses of the lungs in the animal economy, &c. Had those discoveries been made a century sooner, or before the deranged actions of the human organization had been arranged into officially-sanctioned classes, orders, &c., the practice of the

healing art at the present day would have been founded upon quite a different basis.

In order that the reader may distinguish what is in reality a healthy state of the pulse from that which is theoretically considered such ; and that the term "healthy pulse" is comparative with its own different states of action in different states of the system of the same individual, and not in comparison with what is theoretically called a "healthy pulse," he has only to accost the first dozen persons he meets, with,—“How do you do this morning?” and after getting their answers feel their pulse. And he will find, supposing the first one to be a fat, burly man, who looks as though his blood was ready to burst through every pore, breathing laboriously, and with every appearance of being exhausted by the least fatigue, that, although the answer may be, “O, well, quite well,” this man’s pulse will be soft, weak and slow, and his skin will be moist, soft, and warm. The second man may have scarcely flesh enough to cover his bones, and look as though his limbs had been cheated of their rights, but he will breathe easy, move with quickness and decision ; and to the inquiry,—“How do you do this morning?” will answer,—“Quite well, I thank you.” Now, let him feel this man’s pulse ; it is hard and strong, and his skin dry and cool, in comparison with that of the fat and burly man’s, but it is healthy for the state of his system. So the inquiry may go on through the whole dozen ; it will be found that a difference of pulse, corresponding to external appearance, exists in each, whilst all may answer to the inquiry about their health, that they are well.

We thus see that habit has taken the place of nature in these different constitutions ; that their organizations have adapted themselves to the different circumstances under which they are placed, and that there is no such thing in social life as a uniform standard of healthy action in the heart and arteries. We content ourselves, then, with saying that that state of the pulse is the healthy one which serves best for the production, absorption, and reproduction of the organs of the system.

The best way to describe a healthy pulse is by the use of

negatives; as, for instance, a healthy state of the pulse is when it is not too slow nor too hard; too strong or too weak; not too hard, nor too soft, but yet it should partake of all these qualities, which, when combined in due proportion, will give to the mind the idea that the pulse should possess a healthful share of quickness, strength, and elasticity.

The pulse of an adult man should beat about 80 strokes in a minute; and of a woman, 85, when the blood is at 98°. In infancy, the pulsations are from 120 to 150 in the same time; and the blood would be higher than in adults, proportionably with their pulses, were it not that the skin is softer and more moist, and the secretions and excretions quicker. Although, therefore, an infant breathes faster, and generates heat faster than an adult, the increased secretions and excretions keep the heat of the blood down to very nearly the same degree. With the aged, the reverse takes place; the number of their pulsations sinks down to 60 or 65 per minute, and the respirations diminish in the same proportion; so also the secretions and excretions, by which means heat is carried off more slowly.

No subject can be brought to the attention of the physiologist (and, by the by, every one should be a physiologist, at least this far,) which displays to the mind the beauty, harmony, and simplicity of the laws of the Creator more than this, nor is there any subject better calculated to give a clear insight into the laws which govern the actions of the system, or that throws more light upon the proper means of retaining healthy action in the system, and also upon the practice of the healing art, to restore that healthy action after it has become deranged.

To this power of generating animal heat in the body, we invite the particular attention of our readers; for in this power, and in that of getting rid of it again, lies almost entirely the whole secret cause of deranged action in the organs of the system, or what are popularly called "diseases," of every kind whatever. This broad assertion, we are aware, is well calculated to excite the incredulity of our readers, but being confident of its truth, we make it; and express the hope, at the same time,

that those who deny or doubt its truth will give strict attention to what is said hereafter on the subject ; that they will give their minds fair play ; come up to its examination free of prejudice, and investigate the subject for themselves. We have no other object but the establishment of truth, and the amelioration of the condition of those who are laboring under "disease."

We allude, of course, to that cause with which the patient and the physician have to contend in sickness, and which, if not removed, must end in the destruction of the body—that which produces "fever"—that which Dr. CULLEN called the proximate cause, and which he supposed produced spasms, &c., in which, as in several other instances, the learned Doctor took the effect for the cause. But we have before stated that Dr. CULLEN was not blamable for these errors, as the source of animal heat to the blood was not known.

Animal heat, when in proper quantity and degree, is the stimulant to life and healthful action in the system and all its organs ; but when in excess it is the cause of that excessive action which gives pain, and tends to exhaustion, suppuration, putrefaction, and death. If we may venture the suggestion, we will here say, that possibly "Asiatic cholera," which has destroyed the lives of so many, is produced by a cause just the reverse of that which produces fever ; that the lungs, either of themselves, or from some change in the atmospheric air, fail to decarbonize the blood, and consequently to produce heat to the blood.

We have before shown that, by the dispensations of an All-wise Providence, a reciprocal action between the lungs and liver has been established for decarbonizing and purifying the blood ; and that not only are many classes and orders of beings allowed to enjoy the pleasures of existence by this reciprocal action, but the human race, by the same wise dispensation, is allowed to people the earth, and to enjoy life in every inhabitable climate. But still, it must seem obvious to every reflecting mind, that it is almost impossible that such an extremely complicated and highly organized structure as that of the human body—which has to bear the consequences of civilization acting upon it, both inter-

nally and externally, from habits of indulgence in housing, clothing, diet, &c., while at the same time those thus indulging are ignorant of the laws which govern action in their bodies—should pass through all the extremes of heat and cold, atmospheric condensation and rarefaction, moisture and dryness, purity and impurity, without having the action in that complicated structure often deranged, and so much so as to produce its own destruction. Instead, then, of being surprised at the occurrence of such derangements of action, unfortunately heretofore called “diseases,” we should rather be surprised that they so seldom occur, and endeavor to prepare ourselves by understanding the laws which govern the system, and restore it to the healthy state when derangement does occur.

In treating of the causes of deranged action, we do so under the supposition that all parts of the system are in their proper state, but the one spoken of at the time of the operation of the exciting cause.

So long as the blood of the human body is kept at the healthful point of decarbonization by breathing, the other organs (by the laws of the Creator) are able, almost under any circumstances, by aid of evaporation and the secretions and excretions, to overcome the effects of any quantity of heat which may surround the body, and still keep the blood at the healthy point of 98° ; but so soon as the air which passes into the lungs by respiration, fails to keep the blood thus properly decarbonized, and the liver to assist in decarbonizing it by an increased secretion of bile, the secretions and excretions from the other organs must fail to go on to their usual extent, as a necessary consequence of the conservative laws of life and health; or the quantity of heat in the blood must fall below the point of 98° , as there is no other source of heat to the blood but by its decarbonization. These secretions and excretions, therefore, cease partially from the conservative laws of nature, for the purpose of retaining in the blood its true quantity of heat. But it must be evident that, although there is no deranged action yet in the system sufficient to be called “fever” or “disease,” there is a derangement from

the perfectly healthy state of the whole ; and that the system is not now in as good a condition to resist further exciting causes as it was when the blood was perfectly decarbonized. When the secretions and excretions are thus partially suspended by the impure state of the blood, an accumulation of heat in the blood above the healthy point more easily takes place from external causes. Accumulated heat, acting upon the heart and arteries as their most powerful stimulant, makes them drive the blood more rapidly through the lungs, and thus forces the lungs into more rapid breathing and the more rapid generation of heat. Now, we have "fever ;" but we see from the above that the simple fact of the blood not being perfectly decarbonized, is not necessarily a cause of fever or disease in the system. To express ourselves, then, in the language of the allopathic school, we must say that this failure by the air to decarbonize the blood in the lungs is the remote cause of fever ; the accumulated heat in the blood, which drives the heart and arteries into more rapid action, is the immediate or proximate cause. The accelerated action in the heart and arteries, with the increased heat in the system, is the fever itself ; and the local effect, such as abscess, effusion, inflammation, &c., the disease.

Before we enter upon our argument to show that all fevers, whatever may be the names given to them, arise from the same proximate cause, namely, the increased quantity of animal heat in the blood, we shall briefly allude to the new plan of practice which has lately been introduced, called "Hydropathy," or the "Cold Water Cure." This plan of practice, from what we have seen and heard, is equally as successful in one fever as another, or rather is as successful in all diseases as allopathy ; indeed, in some instances, it has succeeded in giving relief where allopathy had failed. If this be true, what a commentary it affords upon the practice of the healing art ! Hydropathy has only one remedy ; and although its practitioners assign to it many services, it must be evident to every one that, applied to the body, it can have but one—the abstraction of heat. Whatever, therefore, may be the consequences of abstraction of heat from the

system, they are the effects of the state of the system at the time. It seems reasonable to suppose, then, that if the abstraction of heat from the system corrects all cases of deranged action, or, in other words, cures all its diseases, an excess of heat is the cause of them all.

Our readers will remember the difference between what has been called the proximate and the remote causes of disease. To explain these in the most simple manner: suppose an individual has had a fall which does not extinguish life, but "disease" comes on, viz., a chill, a fever, and pain. This chill, originating in the spasm of the extreme vessels, is the result, agreeably to the views of the allopathic school, of the "*vis medicatrix naturæ*;" or, in plain English, the "force of nature." During the continuance of this chill the "*vis medicatrix naturæ*" is strengthening itself for the purpose of making a vigorous attack upon the effects produced upon the body by the fall, in order to expel them. These effects may have been the rupture of a bloodvessel and the effusion of blood, the breaking of a bone, &c. If the "*vis medicatrix naturæ*," by its attack with spasm, &c., at once succeeds, there is an end of the matter; but if it does not, the attempt is incessantly continued, or suspended for a while, and repeated daily, every other day, or every third day, as it shall determine; these attempts (or attacks) are, agreeably to the allopathic school, continued, intermitting or remitting diseases. Thus the fall of the individual is said to be the remote cause; the spasm, the proximate cause; and the action in the rest of the system the disease itself, which has to be controlled by the specific operation of medicine. In reference to "bilious," "nervous," "typhus fevers," &c., the thing called "marsh miasma" is taken into the stomach, and there acts as a poison, becoming offensive to the "*vis medicatrix naturæ*," which, as with the fall, brings on spasm to expel it from the system!

Thus is the theory of disease substituted, by Dr. WM. CULLEN and his followers of the allopathic school, for the operation of the simple natural laws of the animal economy.

It is true that neither Dr. CULLEN nor his immediate followers

were acquainted with the uses of the lungs in the animal economy. They knew nothing of the effects of breathing, nor of its decarbonizing the blood, nor of its being the source of animal heat to the system. Any increase of temperature in the blood was a phenomenon for which they could not account by any law of the animal economy. When undertaking to account for an increase of heat under the name of fever, they had to suppose that there existed in the system a principle which, although blind, was powerful for good or evil, and this they called the "*vis medicatrix naturæ*." Any error of opinion with them was therefore excusable. But it is not so with the leaders of that school at the present day; for they ought to know that all increase of heat in the system, although called "fever heat," is as much the effect of regular laws as the increase of anything else; and that it is as much amenable to law, and will be as certainly abstracted from the system by the application of cold, as any other heat. But they never practice the healing art as though they believe thus.

There is another idea of the allopathic school which arose from the same ignorance as to the uses of the lungs in the animal economy. Although false in itself, it appeared to be very plausible at the time it was conceived and promulgated by Dr. CULLEN; but every intelligent person, who has studied the subject at all, must see its erroneousness, and also the injurious consequences which must continue to follow from a persistence in it as a matter of belief. We allude here to the marsh-miatic doctrine of the cause of disease, continued to be taught by the professors of the schools at the present day. They teach that this miasm is a subtle gaseous exhalation, arising from marshes and other places where vegetable and animal matters are acted upon by moisture and heat so as to produce fermentation and decay. Indeed, some have gone so far as to suppose that there is a difference between vegetable and animal exhalations; and, as they were fond of technical names, have designated them by the terms "kino," and "vegeto."

These gaseous matters, they suppose, float about in the air and become mingled with the saliva and food, and are taken into

the stomach, where they act upon the contents of that organ as fomiles or poisons, and produce deranged action or "disease," by the efforts of the "*vis medicatrix naturæ*" to expel them from the system.

This was a plausible theory, inasmuch as it was known that "diseases" were much more prevalent in low and marshy countries and situations than in high and dry ones; besides, there was no other way known by which such gaseous matters could affect the system than through the medium of the stomach. Nothing but the discoveries which have been made of the uses of the lungs in the animal economy, and of the compound nature of atmospheric air, and of the great importance and absolute necessity of oxygen to the blood, could ever have solved the mystery as to how impure air does produce deranged action in the human system.

For, in truth, these exhalations are the causes of derangement of action, but the great error lay in the manner they were supposed to act upon the system. Dr. CULLEN and his followers (as we have before said) supposed they acted in the stomach as fomiles, or poisons: whilst, in fact, they act negatively, by preventing as large a quantity of pure air, and of course oxygen, from entering the lungs and acting upon the blood as would otherwise do so, and thereby preventing the proper decarbonization of the blood. This fact is admitted by Prof. LIEBIG in his *Animal Chemistry*, and by other writers of the present day.

We have stated, in our description of the circulation of the blood, that when the blood reaches the heart it is mixed with all the impurities which have been taken up by the small veins and absorbent vessels from all parts of the system, from the bones, muscles, glands, fluids, &c.; that if there be any diseased organs or parts of organs, any bruised or effused blood, or any matter of any description whatsoever, they all, with the chyle also taken from the food of whatever kind may have been received into the stomach, have to be mixed with the blood in the right auricle of the heart, and sent to the air-cells of the lungs, and there exposed to the action of the atmospheric air taken into them.

And we stated also that atmospheric air has to produce two indispensable effects upon this impure blood before it can again be rendered fit to perform the long circulation of the blood, or circulation of nutrition in the system. These two effects are, first, the blood must be properly oxydized, and all unnecessary carbon carried off from it ; and, secondly, the blood must be supplied with the proper quantity of animal heat to raise the temperature of the system just to the healthy point of 98° ; and any failure to produce these effects must be attended by derangement of action, and the blood be left in an improper state to carry on, in its next round through the system, secretion, assimilation, nutrition, &c.

Atmospheric air is known to be a compound of two gases : seventy-seven parts nitrogen, and twenty-three oxygen ; there is also a small portion of carbonic acid gas. While there never can be any change in the relative proportions of the constituent elements, it is known to be subject to a variety of changes affecting the purpose of respiration. The barometer shows us that it is almost constantly undergoing expansion and condensation ; that whilst its common amount of pressure upon the earth and all other things is about fifteen pounds to the square inch of surface at the level of the ocean, this amount of pressure often changes, and becomes greater or less. Consequently, the lungs receive the air into them at each inhalation with more ease in proportion as that pressure becomes greater, and with more difficulty as the pressure become less. This fact is made evident to the feeling of every person who ascends and descends a mountain, where the pressure of the atmospheric air lessens as the height increases. The higher, therefore, one goes, the more difficulty he feels in filling his lungs with air ; and, on the contrary, in descending, the lower he gets the easier it is to do so.

The thermometer shows us that the air we live in (say at 36° N.) is subject, in the course of a few months, to a change of from 20° below the freezing point to 100° above the freezing point. Here is the expansive power of 120° of heat acting upon the air we breathe ; whilst at the same time the capacity of the lungs to

receive air to oxydize and decarbonize the blood is of necessity limited to a certain extent. If man had had no experience of this fact, it would seem to him that life could not be supported under it for an hour, and nothing but the laws of a good and wise Creator could have arranged things to do so; for although this amount of 120° of heat does act upon the air, yet we find that it is not, as regards its pressure upon the earth's surface and other matters, materially affected by it.

Now, let us suppose for a moment that this pressure of the atmospheric air was greatly lessened by 120° of heat, the consequences which must follow would be, that evaporation and expansion would take place so fast in all matter that life in all living beings, with their present organization, must soon be destroyed; but, under the existing laws which govern this atmospheric pressure, man and all other living beings, adapted by their organization to this climate, move, breathe and enjoy life under this 120° of heat almost as well as at any other.

We have before remarked that there are other causes which serve to produce the effect of changes in the pressure of the atmosphere. But let this effect come from whatsoever cause it may, whenever the pressure of the air is lessened, healthful action in all breathing creatures must suffer thereby.

But there are other effects which all must admit will be produced upon the air by 120° of heat; and particularly where it comes in contact with dead animal and vegetable matters, and a due quantity of moisture, which will render it unfit for healthful respiration, and thereby serve to derange the healthful action of the system; which effects we hope will answer to account for deranged action in the system called disease, in the place of that hydra-headed, non-come-at-able monster, called, by the members of the allopathic schools "marsh miasma," of which no chemist, however close may have been his investigation, has been able to detect a trace.

Atmospheric air (we have said) is composed of 77 parts of nitrogen and of only 23 parts of oxygen; and these 23 parts of oxygen have both to oxydize the blood and to carry off all un-

necessary carbon from it by respiration. The oxygen gas of the air has likewise to carry on all fermentation in animal and vegetable matters, and heat is essentially necessary to the promotion of that fermentation, whilst carbonic acid gas is the result of that fermentation, which is destructive to life when breathed. It must be evident therefore to every reflecting and intelligent mind, that whenever there is dead animal, or vegetable matter, moisture, and heat, the air of the atmosphere will give up its oxygen to the fermenting mass; and that carbonic acid gas will be given out, and consequently there must be a deficiency of pure atmospheric air for the promotion of healthful action in the human system, whilst there is a superabundance of carbonic acid gas to produce derangement of action, or disease.

It is true (as we have before said) that the relative proportions of nitrogen and oxygen gases never can be changed or destroyed in atmospheric air; hence all reports of analysis of atmospheric air make it pure. But it is true, likewise, that no two matters can occupy (even if they be gases) the same point in space at the same time; and that the lungs are limited in their capacity to receive air. Consequently, the presence of carbonic acid gas in the air breathed must prevent the admission of pure air into the lungs, just to the extent of that presence, and just to that extent prevent the proper oxydation and decarbonization of the blood.

Wherever, then, heat, moisture, and animal or vegetable matters, or both, meet together and go into the state of fermentation (which they will certainly do), there will surely be generated abundant cause of sickness and death, without our having to call upon our imagination to conjure up supernatural or hidden causes, (miasms, &c.,) and without our having to charge such sickness and death to the wrath of an offended Deity. But not only this, when the causes of sickness are known, how easy it is often to remove them and prevent the further spread of such sickness!

In proof of the above we will here simply remark that common limestone is a compound of carbonic acid and lime, and that

by burning the limestone the carbonic acid is driven from the lime in the form of carbonic acid gas. The lime by its affinity is now constantly exerting an influence to absorb carbonic acid gas from every thing around it. Consequently, whenever unslacked lime is spread in a neighborhood where animal or vegetable matters are fermenting, the carbonic acid gas which is generated by that process unites with the lime, and limestone in powder is formed, the air is purified, and the lungs can again take in pure air enough to oxydize and decarbonize the blood to the proper point. This fact is tested every year in some town or other of our widely-spread country.

But we are not to conclude that this carbonic acid gas, derived from the fermentation produced by heat, moisture and animal or vegetable matters, is the only preventive to healthful action and healthful breathing produced by the change from the temperature of 20° below zero, to 100° above it—a change of 120° . For we must bear in mind the following facts: the air itself is often expanded by it; very many things are now raised into the air in a gaseous state which were before in a state of fluidity. Watery vapors fill the air; and every thing, such as dust and the fine particles of animal and vegetable matters, which can be held in suspension in the air by these watery vapors and gaseous matters, now serve to take up space in the lungs (the hair in the nose of every person is a provision by a kind providence against these things), and prevent the full supply of air in the lungs which otherwise would be there for the blood to act upon. He who reflects upon all these things properly can but wonder and adore the great Author of Life for the provisions which have been made to enable the animal system to continue the actions of life in a healthful state under all the circumstances which surround the body, and feel that, to learn the laws of life and comprehend them, and the causes which serve to obstruct their execution, is the first step toward being able to fulfil the great command,—“Be ye charitable the one toward the other.”

There are some facts in anatomy and physiology which we will mention here, and hope our readers will bear them in mind,

as they serve to explain some circumstances which could not otherwise be easily understood.

The capacity of the human lungs is limited in every individual to receive air, but some have larger lungs and more expanded chests than others; consequently, they can withstand the deleterious influences of impure air longer. It is a known fact that persons born and raised in high mountainous situations, where the air is expanded in proportion to its elevation, have larger lungs and more expanded chests than persons who are born and raised in lower regions, where the pressure of the atmospheric air is greater.

This fact is another evidence of the wisdom and goodness of the Almighty Creator, to enable man to inhabit the whole earth, and it should have taught physiologists long ago the vast importance of this organ in the economy of life, and the healthful development of the system. But the one idea of "disease" being something *sui generis*, or a something excited into action by a specific poison, exciting into action the "*vis medicatrix naturæ*," seems to have swallowed up every other consideration.

The changes which take place in the blood by the act of breathing, are the following: the blood which arrives in the air-cells of the lungs is of a dark color, in consequence of an excess of carbon, and is less fluid, from having given out during its circulation of nutrition, its heat and fluidity to the secretions, &c. The oxygen of the atmospheric air, previous to its union with the blood, is in a gaseous or aëriform state, and consequently holds more heat in it than the same amount of oxygen when united with carbon in the shape of carbonic acid gas—with the iron of the blood—or with any other part of the blood which gives it a more solid form than it previously had in its gaseous state. This fact will not be denied or doubted by any one who has witnessed the process of fermentation, and given to it any of his attention; there, as in the act of breathing, a union between oxygen and carbon takes place, and heat is evolved, whilst carbonic acid gas is formed. The only apparent difference is, that in the lungs the union between the oxygen and carbon seems to take place more rapidly.

It must be evident then to every reflecting and unprejudiced mind, that the quantity of carbon taken from the blood must depend upon the quantity of oxygen which comes into contact with the blood in the lungs—that the quantity of caloric which is given out to heat the blood and the surrounding organs must depend upon the quantity of carbonic acid gas formed, and that both of these must depend upon the quantity and purity of the atmospheric air breathed.

The carbonic acid gas thus formed is driven out at the next expiration from the lungs; and the effect produced upon the blood is made evident by its increased heat, by the brightness of its color, and by its greater fluidity; all these changes constitute it arterial blood. It is now ready to be taken back to the heart, and there enter again upon the long circulation, or circulation of nutrition.

We are now about to make some statements and remarks which we believe to be wholly new; but we know them to be true, both by reasoning from the laws of Nature and by experience for the last eighteen years; and we invite every human being to a fair test of their truth, for upon the acceptance or rejection of them the lives of millions of human beings depend.

Any one individual act of breathing is surely a voluntary act; but the number of respirations in a given time depends as surely upon the degree of animal heat which is in the blood at the time, and upon the degree of excitability or disposition to be acted upon by stimuli in the system. (By animal heat we mean that heat which has been generated, as above described, in the blood.) This will be evident to every person who will watch the respirations of any one during the progress of what is called fever.

The ordinary number of respirations in an adult person in health is about twenty in a minute of time, and the ordinary number of pulsations in the same time is about seventy, whilst the temperature of the blood will surely be at ninety-eight degrees; we mean as evidenced by the thermometer in the mouth, &c.

Here we see that twenty respirations of air, keep up the

number of pulsations to seventy in a minute, and the temperature of the blood, under almost any state of exposure of the body, at ninety-eight degrees of heat.

It is said, that the temperature of the blood during fever is one hundred degrees. Now, let us see, by the rule of proportion, if twenty respirations will give ninety-eight degrees of heat to the blood, and keep it up to that temperature under almost any circumstances, what number of respirations will raise the temperature to one hundred and ten degrees, fever heat, and keep it at that temperature, if there be no increased means of carrying off heat from the body? By this simple rule we shall find that the increase of the number of respirations need not be more than three per minute, viz.: to raise the whole number of respirations to twenty-three, to produce that effect, and yet allow some for an increased loss of heat by increased radiation, as all bodies must part with heat faster or slower in proportion to the quantity they have in them.

Now we will ask of every candid person who has ever witnessed the progress of a fever, if he has ever seen one in which the number of respirations, previous to the coming on of the sweating stage, or some excretion by which heat was carried off from the body, was increased less than three in a minute.

All animal heat in the body being generated by the same cause, viz., the decomposition of atmospheric air in the lungs by breathing, and animal heat being the natural stimulant to action in the heart and arteries, it follows, as a matter of course, that, whenever a quantity of heat does not pass off from the system equal to the supply, the increased heat becomes an additional stimulant to action in the heart and arteries, and causes more frequent breathing, and the decomposition of more air in the lungs, and of course the generation of more heat. Thus we have the reciprocal action of these causes and effects, acting upon each other, effects becoming causes, and these causes producing new effects, and what is called fever is generated in the system, which, being once produced, must continue, if not carried off

by external cold, until increased perspiration, or some other increased secretion and excretion, carries off the accumulated heat from the system.

Hence physicians and the people generally are fond of using medicines producing an increase of perspiration, and if they fail, then they resort to medicines producing the other secretions and excretions, such as purgatives, etc.

As an illustration of the above facts, let us suppose that an individual, without any apparent cause of fever, goes to bed and covers himself with a large number of blankets. In these blankets there is no innate heat, but, in consequence of being bad conductors, they confine the heat generated in the lungs of the individual who is under them, by the decomposition of atmospheric air and the fixation of oxygen, and radiated from the body. As soon as the air which surrounds the body has as much heat in it as the body itself, there can be no more heat radiated from the body, and of course all heat which is afterwards generated by the process of breathing must remain in the blood, and act as a stimulant to the heart and arteries, giving to them increased action. Now, if there be nothing to prevent it, perspiration will flow from every pore, and the increased heat carried off in this way; the individual will rise afterwards with but little change in his feelings, and not at all injured in his health. But, let us suppose that the blood was not properly decarbonized, perspiration will not flow freely, the blood will retain its heat, and the individual will have what is called "fever," "head-ache," &c.; and it will probably be said, "He has caught cold," &c.

But let us suppose that the individual's blood was properly decarbonized, and suppose that, just before drawing on the blankets, he had rubbed his skin over the whole surface with some oily matter, which, although it contained no medicinal property in itself, could penetrate and stop up all the pores of the skin, so that no perspiration could pass off from the blood. This individual would be in a somewhat similar condition to the one whose blood had not been properly decarbonized, and would

labor under fever, if the bowels or some other of the organs did not give way and carry off the heat by increased secretions and excretions.

Thousands of persons ignorantly injure themselves by the use of blankets and flannels; and thousands are injured by the advice of others, who, not reflecting upon the different capacities of the lungs of different persons to decarbonize the blood and give it heat, recommend the indiscriminate use of flannels.

The foregoing facts, and a few others which we shall next mention, give to the economy of life and of healthful action in the system, and the derangements to which it is liable, altogether a new aspect, when viewed in comparison with the opinions which were entertained by the founders of the allopathic school, and are entertained by the followers of that school at the present day. With them life appears to be something which is placed in the body, and guarded by that innate something called the "*vis medicatrix naturæ*," which has will and intelligence. And disease also seems to them to have a will, but that will may be controlled by the "*vis medicatrix naturæ*," and by proper remedies which seem to act by specific power over them.

These hypothetical views of the nature of life in the body, and of the nature of diseases, were pardonable, and so were the views of the practice of medicine founded upon them sixty years ago; but they are not so at the present day, when science has unfolded the great book of nature, and made known to man the uses of the different organs of the system, and the laws by which the actions of those organs are governed; and we have reasons to induce the hope that the time will shortly come when remedies will be used to correct deranged action in the human system with nearly as much certainty of success as they are now to the deranged actions of highly mechanical instruments, all the parts and powers of which are understood.

We here mention in succession the following laws and facts in the animal economy, which, although known to many, have not heretofore made that impression which their importance to the wellbeing of the body requires, and which should never be lost

sight of by those who wish to maintain their own health, or to restore that of others ; laws which, if once fully understood, and their importance properly impressed upon the mind, can never afterwards be forgotten, closely connected as they are with all the phenomena of life and healthful action in the system.

1st. The temperature or quantity of heat in the blood of all human bodies, whilst in the healthy state, is at or very near ninety-eight degrees, as indicated by placing the bulb of the thermometer under the tongue, in the armpit, &c., possibly varying a very little from the peculiarity of constitution in some individuals ; but it is invariably the same in the same individual, under all changes of temperature of the surrounding air, whether he is upon the top of the highest mountain or at the bottom of the deepest cavern ; whether he be placed within the Arctic Circle, or on a desert of the Torrid Zone ; whether his clothing be of purple and fine linen, or of rags ; whether his body be placed in a warm bed and covered with a dozen blankets, or exposed on the cold and damp floor of a prison. Otherwise, deranged action in the system, or " fever," will be the consequence.

2d. The temperature of the blood in the human body, under ordinary circumstances, is higher than that of the surrounding air ; all the heat, therefore, it can receive must be by respiration, as it is a law of nature that no body, whether animate or inanimate, can receive heat from another which is at a lower temperature than itself.

3d. Inasmuch as breathing is the sole cause of heat to the blood ; as exercise of the body increases the necessity for breathing, and also increases the " fever heat," as well as the ordinary heat of the blood ; and inasmuch as it is admitted that rest diminishes the necessity for breathing, diminishes " fever heat," as well as that of the ordinarily accumulated heat of the body, it must be a fair induction that animal heat and fever heat are one and the same thing, only that the latter is the former in excess, and produced by the same cause. The conclusion is inevitable that the best, safest, and quickest way of relieving the human system from " fever," is by abstracting the heat from the system.

4th. Animal and vegetable matters which have ceased to live run into the fermentative process rapidly at almost any temperature, whilst living animal solids and fluids resist the laws of fermentation perfectly up to the temperature of ninety-eight degrees, and almost entirely up to one hundred and ten degrees, the fever point. The human stomach carries on the process of digestion of both animal and vegetable matters perfectly, so long as the temperature of the blood is kept down to ninety-eight degrees; but as soon as the heat of the blood is raised above that point, the process of fermentation commences, assimilation stops, and there is an end to nutrition.

5th. The heat of the blood being wholly derived from breathing (a circumstance which must never be lost sight of), and heat being the stimulant to action in the heart and arteries, and as the heart and arteries increase in action, so must the lungs increase in their action, and a consequent increased production of heat to the blood be the consequence. And breathing being a function over which the mind of the individual can have but little control, it must be evident to every one who will reflect, that there must be great difficulty in getting rid of this increased heat in the blood, when such increase has once taken place.

Here we can understand the cause of the controversy between Dr. RUSH and the other physician before mentioned, in which Dr. RUSH accused him of purging his patients too much, whilst the other accused Dr. RUSH of bleeding his patients too much. Both were trying to relieve their patients of too much heat, but took different methods of producing the desired object. So much for being taught to look upon fever heat as something different from ordinary heat, and believing that it cannot be carried off by the ordinary means which carry heat from other bodies.

6th. The blood in the human body not being decarbonized to a given point, does not of itself produce deranged action in the system, but predisposes to it; and this predisposition may continue until it is removed by a change in the air breathed, or until deranged action (disease) is excited in the system by an increase of excitability being produced by the sudden withdrawal of heat

(cold), the consequent increase of excitability in the system; and then the sudden reapplication of heat to the body, upon the principles we have before explained. Action in the system is life; action is an effect produced by stimuli acting upon the innate principle in the system called excitability. Healthy action is that amount of action which is produced in the organs by a due proportion of stimuli acting upon the innate excitability, and deranged action, or "disease," is that action which is produced by an undue amount of stimuli acting upon the innate principle of excitability.

Increased action in the system being thus produced by the reapplication of the stimulus of heat acting upon the increased excitability in the bloodvessels, and the blood not being decarbonized and oxydized to the proper point, the organs of secretion and excretion, perspiration, &c., which are the proper channels for carrying off heat, fail to perform their proper functions, and two important consequences follow, namely, the heat of the blood increases, and at the same time the bloodvessels become over-filled with the blood; these consequences react upon the heart, arteries and brain, and in this way deranged action (disease) is fully established in the system.

7th. The blood being decarbonized and oxydized by coming into contact with atmospheric air in the air-cells of the lungs, of course there is a point of this important process at which healthy action is most easily supported. This let us call the healthy point. But inasmuch as the atmospheric air is subject to many disturbing causes, it cannot always be in the best condition for producing its effects exactly to that point, and we have many reasons for supposing that exactly the same state of the air does not suit every individual's constitution. Let us suppose, then, that the decarbonization and oxydation of the blood goes to the proper point, for the constitution of one individual, when the barometer indicates a certain amount of pressure and condensation, and the thermometer a certain amount of heat in the air, although it may not suit exactly for another.

But this state of the air cannot last long, and a change must

take place, as nature has other great operations to perform besides that of adapting itself to the healthful condition of a small portion of the human race. This change takes place, and these suffer whilst others are benefited.

Heat expands all bodies, and, when great enough, raises many into the gaseous state which were before liquids. These must take up space in the air, and when they enter the lungs must serve to exclude that much oxygen and nitrogen, consequently the blood is not acted upon to the point it otherwise would be. Here we see sufficient cause why some persons should suffer, while others enjoy good health; and we can see here, also, when these changes go far enough, the causes which produce what are called "epidemical diseases."

If we add to these natural causes the artificial or accidental ones which occur from ignorance of the true nature and causes of deranged action in the organs; by overloading the stomach with stimulating and offending matters; by the burthening of the body with flannels and other clothing, which prevent the free escape of accumulated heat in the blood; and by the exposure to the stimulating effects of heat after the excitability of the system has been increased by cold, we may readily account for all the sickness in the world, without charging it to a wise and beneficent Creator. To gain a knowledge of the laws of the Creator is but to gain a knowledge of his goodness.

Daily experience serves to prove to the unprejudiced mind the existence of the foregoing facts and laws in the animal economy. To be set right, we have only to free our minds from the habit of believing that deranged actions are individual something, of which the body has to be cured.

The term "cured" has a signification in the practice of the healing art which leads the mind to error and misconception, and has changed the object of the practice of the art from a scientific one to that which is a cheat and a juggle. In fact and in truth, the practice of physic at the present day is a compound of a little scientific truth mixed up with a great deal of gross ignorance and superstition. And this has arisen from the fact,

that the most learned and scientific could not properly account for the true causes of deranged action until the discovery was made of the nature of atmospheric air, and of the uses of the lungs in the animal economy. "To be cured," in the language of the day, implies that a miracle has been wrought; that something has been done over and above simply permitting the laws of the Creator to be carried out in the human body. Whereas, the human body and all its organs constitute one whole, and will continue so from its birth to the perfection of life in old age, if it be supplied with atmospheric air suitable for breathing; if it remains in a temperature suitable to the development of its parts; is supplied with food and drink in due quantities, and allowed suitable exercise and rest. And if, from any cause or causes, one of its parts is injured, or taken away, the rest, so long as the action going on in them is kept in the proper state, have a disposition to promote its restoration. So with deranged action in the system: whenever the exciting cause is removed, there is always a disposition in the organs to return to the healthy state of action and reproduction. This restoration is the cure. The cure of a "disease" is, and can be, nothing more than the removal of the cause which produces deranged action in the system.

If there be an object on earth that deserves pity and compassion, it is that human being who is laboring under an apparent local affection, producing pain and suffering, but in reality caused by general deranged action in the system (almost always the case), and who is attended by an empiric, who himself believes, and has made his patient believe, that the affection can be cured by local remedies.

It is known that individuals have gone into ovens hot enough to bake food, and remained there for some time, and yet come out again in the enjoyment of good health; that persons are daily exposed to extreme cold without receiving any injury. And, again, an individual may have eaten daily of food for months without being made sick, but, at last, the same article, of which he had eaten so often with impunity, seems to be the cause of extreme sickness. From this we must see, that neither

external heat, nor cold, nor food, is the direct cause of sickness. And yet we have been taught to believe that external heat can produce fever ; that we can “ catch a cold,” and that food of the most nutritive character can produce a fit of the colic, &c.

These opinions as to the nature and cause of diseases, and the language used to express them, were perhaps the best which could have been adopted before the uses of the lungs, and of atmospheric air in the animal economy, were known. But in the present advanced state of knowledge, it is time that a language should be adopted which would be more in accordance with the laws of nature as now understood, and which would convey to the mind a more distinct idea of the real nature of deranged action in the system. For we will venture to assert, that the single belief of having literally “ caught a cold ” causes annually the premature deaths of thousands.

Nor would the good effects of a better understanding of the real nature of deranged action in the system stop with the improved health of the body ; for, could the laws of life and healthy action in the system be properly understood, there is no kind of knowledge better calculated to fill the mind with love, gratitude, and veneration toward the Creator. In every situation man would see the conservative influences of the laws of the Creator protecting him from its injurious effects. For instance, he enters the heated oven. Here, if the oxygen of the air could enter his lungs in the same quantities it does in colder situations, he must inevitably perish from the violent action which would now be produced in the heart and arteries. But, instead of this, the air is expanded, less oxygen enters the lungs, and of course less heat is evolved to the blood by breathing, while at the same time the pores of the skin are relaxed, and perspiration is poured out profusely, by which means heat is carried off from the blood as fast as formed ; and when he leaves the oven, his blood is of the same temperature as when he entered it.

On the other hand, when a man enters an extremely cold situation, everything which served to take up space in the lungs, and to prevent the free admission of oxygen to the blood, is now

settled out of the air, as large a quantity as possible of oxygen acts upon the blood, and of course as large a quantity of heat is given off to it, whilst the pores of the skin are closed, and no moisture is allowed to pass them to carry off the heat of the blood.

In these laws, we must see the wise and beneficent dispensations of a kind Providence; and the same kindness is manifested in all the laws of life. But they could not be understood until science had opened the paths of knowledge to the human mind. Hence, where error of opinion has existed among the people by improper instruction, it ought to be corrected as soon as possible. For, as we have before remarked, to know the laws of the Creator is but to know His goodness.

The people have been taught to believe that certain articles of food will sometimes produce the disease called "colic." How strange it must appear to an uninformed mind, that a kind Providence should produce an article of food (one, too, delightful to the taste and nourishing to the body) which will sometimes cause sickness and death, and be at other times innocent and nutritive! Thus it would seem as if the Creator were sporting with the health and lives of His creatures. But when the laws of the Creator are properly understood, how different from this is the truth! Then we find that all is harmony, beauty, and goodness.

We have before stated, that a failure by the atmospheric air to decarbonize the blood properly through the lungs is not necessarily a cause of derangement of action in the organs of the system, but that it predisposes them to take on deranged action; and that when the blood is not properly decarbonized, it becomes thicker and less stimulating to the small arteries, capillaries, and small veins,—hence it does not pass through them as easily on its way back to the heart. Difficult or suppressed perspiration is the consequence, and, at the same time, and from the same cause, heat accumulates on the surface of the body. This heat lessens the sensibility of the nervous system to its stimulating influence; and in this situation of the system, if the liver does not now come

to the relief of the blood, and decarbonize it by an increased secretion of bile (in some instances this is done by the cellular tissue), deranged action is very apt to be produced by the first exciting cause which happens.

This imperfect state of decarbonization of the blood is known and understood by the people, by the expression of "a bad state of the blood"; and if there is ever a situation in which the old saying—"A stitch in time saves nine"—is true, it is this; because individuals whose blood is in this state are constantly liable to be attacked by what are called "bad colds," pleurisies, rheumatisms, &c., in the winter season, and to take on whatever states of deranged action may be prevalent in the other seasons. The liver assists in decarbonizing the blood by the secretion of bile; persons who find themselves in the situation above described should take small doses of any kind of medicine which experience has taught them acts easily and mildly on them as a purgative, at bedtime, for a few nights in succession. They should take it at bedtime, because the system is more relaxed, and the pulse is softer during sleep; and the liver, in consequence of such relaxation, is more apt to secrete bile freely. If the pulse be in the right state, that is, not much above nor any below the healthy point, the secretion will surely take place, and relief be as surely given.

We must here mention a state of the human system, and the circumstances connected with it, which has caused more suffering and deaths amongst mankind than all other states of deranged action to which their bodies are liable; and we hope our readers will give to it their undivided attention, as it may serve to elucidate many of the phenomena of the animal economy. Nor is it strange that the state of the system here alluded to should have produced suffering and death in consequence of the opinions which have been inculcated in the minds of the people as to the nature of what are called "diseases." The people, from education and habit, believing not only in the existence of diseases, but that they can do whatever they please with their bodies even unto death, feel that it is the best thing they can do

to submit to their will. And if the disease makes them feel the sensation of chilliness, then the best way is to make themselves warm in whatever manner they can. Hence the universal practice of mankind is to make themselves warm by the application of heat, or the causes of heat, whenever they feel the sensation of chilliness, although the feeling of their pulse, their skin, and their frequent breathing, may indicate that there is already too much heat in their blood.

We have stated that ninety-eight degrees of heat is the proper quantity in the blood to carry on the functions of life in the body healthfully, and that all heat in the blood is derived from breathing. And we have stated likewise, that the brain and its appendages are the organs of sensation and feeling of every kind in all parts of the body. Experience teaches us in very many ways, that nervous power of sensation and feeling, generated in the brain and its appendages, is both accumulated and expended to exhaustion in the system as well as any other of the vital powers. Our eyes, for instance, when they have been exposed to the action of intense light, lose their power of perceiving objects for a while, because their nervous power has been exhausted by the stimulus of light. When our ears have been acted upon by loud sounds, they cannot distinguish weak sounds immediately afterwards, from the same cause; and so with our feeling the sensation of warmth soon after our blood is suddenly overheated. The temperature of the blood in a healthy state being always at ninety-eight degrees, if that temperature is suddenly raised much higher, the nervous power of feeling is exhausted, and the sensation of chilliness is felt, which, unfortunately for us, we have been taught to believe, is the effect of a lack of heat in the system, instead of our being taught that it is the effect of the exhausted state of the nervous power, and the consequent inability to feel the presence of heat. And we have also been taught to try to raise the heat of the system to suit the weakened power of feeling, instead of trying to diminish the increased quantity of heat, that the nervous power of feeling might increase to the proper standard.

Whilst we were children, we delighted to run in the cold air, and even to play in the snow, because this exposure invigorated our systems, and rendered active our minds; but education, habit, and the fear of what is called "catching a cold," &c., soon deprived us of this pleasure, and we become more and more habituated to the enervating influence of heat, and a worn-down state of the excitability is the consequence; and by the time many of us have reached the middle age of life, we can scarcely, by the assistance of flannels and other clothing, retain heat enough in our systems to keep them comfortable, if we have not already excited into a state of deranged action some organ of the body, and thereby become invalids for life.

Now let us suppose that, instead of weakening the light which blinds our eyes by closing the eye-lids, and keeping them shut until we find relief, we were not only to keep them open, but were to increase the intensity of the light, how long may we suppose our eyes would be of use to us, as means of distinguishing objects around us? And so it is with the nervous power of all the organs of the system.

We have stated that healthful action, at the temperature of ninety-eight degrees in the blood, resists perfectly all tendency to putrefaction or decomposition in the solids and fluids of the system. But as the temperature of the blood rises higher than that degree, and as the action in the heart and arteries becomes more and more deranged from the proper standard of healthful action, so do the solids and fluids of the body tend to fermentation and decay. This is disease, and there is and can be no other.

In consequence of this insensibility of the nervous system to the presence of accumulated heat in the blood above the healthy point of ninety-eight degrees, and the sensation of chilliness being produced by it, as is the case in the "disease" unfortunately called "a bad cold"—a name implying that there is a lack of heat, instead of there being too much of it—and also the delusive experience which has been gained by the people by sometimes succeeding in *curing* these *bad colds* by the use of stimulating

remedies and a further accumulation of heat in the blood, and thereby forcing perspiration (which, if it can be excited, may, by carrying off the accumulated heat in the blood, give relief),—these remedies, if they do not give relief in this way, must, by the laws of the Creator, and always do, make the matter worse; and, in this way, this practice gives ground for the expression that the *consumption* is caused by badly-cured *colds*.

In the opinion of the writer, there are but two ways of correcting these unfortunate opinions and practices, which are, by a diffusion of a correct knowledge of the source of heat to the blood, and a proper understanding of the indications of the pulse.

We have now endeavored to point out and to explain to our readers the two great sources or causes of action (life) in the animal system, namely, excitability, or the inherent capacity of organized matter of being acted upon by stimuli; and animal heat, the great stimulant or excitant to action or life in that organized matter.

The first of these, excitability, is a property of organized matter, which is innate, self-produced, and dependent upon the organization of matter. It is in all organized matter, more or less, which is capable of life; and it enables that matter to be acted upon by stimuli: action is the consequence, and that action is life. But of this property of organized matter, which we call excitability, nothing is known but what has been learned by experience and observation. These have taught that it seems to be an emanation from the brain and spinal marrow along the nervous cords over the whole system; but with this we have nothing to do at present, as our object is its practical effect upon organized matter. Observation and experience teach us that this property of being acted upon in organic matter increases by rest, but is exhausted by the action produced in the organ, by the application of its peculiar stimulant; that upon the application of a given quantity of its proper stimulus to any organ, a certain quantity of action or sensation will be produced in that organ, but upon the reapplication of the same stimulus and same quantity,

an equal amount of sensation, or action, will not be produced in the organ. Hence it is said that the amount of excitability in the organ has been lessened ; and, on the contrary, when the customary stimulus of an organ has been withdrawn or diminished in quantity for a short time, the reapplication of the customary quantity of stimulus will produce an increased quantity of sensation or action. Consequently, the quantity of excitability is said to have been increased in the organ.

The truth of these observations is made plain to our senses every day. Our eyes become extremely sensible to the stimulating effects of light after being in the dark for a short time ; and, on the contrary, they become almost insensible to a small quantity, after they have been exposed for a short time to an intense light. Our hands feel the sensation of coldness, if they are exposed to the temperature of 60° of heat, after having been kept for a while in a temperature of 100° ; and, on the contrary, they feel the sensation of warmth, if exposed to the temperature of 60° , after having been kept for a while in the temperature of 32° . And so with the dram-drinker ; at first, a small quantity of spirits mixed with a large quantity of water stimulated his palate sufficiently ; but, after a while, even ardent spirits without water is not too strong for him. And so likewise with our organs of hearing ; sounds which were once extremely disagreeable lose their effect, and we scarcely hear them at all ; and so on, through all the actions and sensations of our whole system.

In this way the Creator of all has been teaching man, from his first creation to the present day, to know himself ; but how little has man gained by it ! For, this night, let a ball be given, and there will be scores of weak and delicate persons of both sexes who will attend it, and fatigue themselves by dancing in a heated atmosphere, until their systems are worn down, and then suddenly expose themselves to the cold air, where they may only remain long enough for the excitability of their systems (the nature of which we have endeavored to explain) to increase to its highest point, when they arrive at home, enter warm rooms,

go to bed, and sleep under much clothing, after, perhaps, taking highly stimulating potations, and then, if increased action takes place in their throats, lungs, heads, or joints, as Nature has taught them many times before will be the case, by the aching of their hands when brought to the fire, after being exposed to the cold, and the aching and blindness of their eyes when suddenly brought into a strong light after being in the dark (as we have explained above),—all will be forgotten, and the idea will be immediately conceived by themselves and friends that they have caught a cold ; and then stimulating remedies for this imagined cold follow, until this simply increased action in their throats, lungs, &c., is turned into consumption, pleurisy, rheumatism, or something of the kind. Thus we see how little has been gained by the people, from the experience which has been set before them by a kind Providence, to give them a knowledge of themselves ; or from the severer warnings they daily witness of consumptions, rheumatisms, &c., brought on by the course which is generally pursued in such cases.

Animal heat, the other great cause of action in the system (as we have heretofore endeavored to show), being wholly derived from the decomposition of atmospheric air in the lungs by the blood, is as constantly being accumulated and as constantly being exhausted in the system as the excitability is ; but yet, it is upon the action produced in the system by these two causes that life itself depends ; and from the regularity of this action health is derived, and the proper development of the whole body.

We have heretofore treated of the principles, or causes of action or life in the human system, and of the laws which govern the animal economy, mostly as abstract facts ; but hereafter, we shall endeavor to apply them more closely to the circumstances of life, as that life is influenced by education, habit, and fashion. We have shown by our preceding remarks, that the two great causes of action or life in the animal body, viz., excitability and animal heat, are being constantly accumulating in the system from sources over which the individual himself can have but little

control; and that little is exercised not over the number of respirations, or the amount of air breathed, but in selecting the place in which he lives, and to that extent selecting the air he breathes. But it must be evident to every dispassionate mind that education, prejudice, habit, and fashion have much to do with the amount of animal heat which escapes from, or is retained in, the blood. And it must be evident likewise, if we reflect upon the laws which govern life and the healthful development of the system, that, by the manner of clothing, which possesses more or less the power of retaining heat in, or of conducting it from, the body, education, prejudice, habit, and fashion have much more to do with life and the healthful development of the body than is generally supposed; and, unfortunately for the health of the people, these prejudices, habits, and fashions have been introduced much more from other considerations than they have been governed by a knowledge of the laws of the animal economy.

When we look rightly at these things, we must understand that the good and wise Author of Life has provided by his laws, in a great measure, against the evil consequences of ignorance in the human mind and consequent error; that, instead of inflicting by His will pains and wasteful diseases upon our bodies, such things are only effects of laws designed as provisions against our own errors. Let us take, as an illustration of the truth of this, the law which causes perspiration to flow freely from the momentary accumulation of heat in our blood. When the cause which produces this accumulation is but momentary, such as exercise, &c., the flow of perspiration is pleasant; it carries off the heat, and relief to the system is afforded. This flow of perspiration, we must recollect, is not confined to the skin, but takes place on all the surface of the cavities of the body. In a healthy state of the whole system the absorbent vessels and small veins of these cavities take up this perspired fluid and carry it back again into the circulating blood, and healthful action in the system is maintained.

In the natural state of man a great proportion of the heat generated in his blood by breathing was thrown off by exhalation from

the surface of his body ; but now, from his ignorance of the laws of life, from his fears and prejudices, and from the fashions of the day, this natural emission of heat from his body is prevented by clothing designed for that purpose, and heat becomes permanent in the blood.

The same beneficent laws continue to act now when the heat is retained in the blood by clothing, by exercise, &c., which gave relief to the system when the source of heat was transitory. But (as we have so often tried to explain) the excitability of the absorbent vessels which take up the effused fluids may at last be exhausted, and they may fail to perform that duty. If this failure takes place in the bowels, then the "disease" called "diarrhea" follows. If it take place in the cellular membranes of the muscles, then it is called "anasarca." If in the brain, then the disease is called "dropsy of the brain." But if the absorbents do not fail in their duty, and the blood fails to be decarbonized by a vitiated state of the atmospheric air, then obstruction may take place in some of the smaller vessels, and inflammation and fever may be the consequence. This may take place in any of the organs of the system. If it is located in the lungs, then it is called "consumption;" if in the liver, then it is called "hepatitis;" if in the throat, it is called "bronchitis," &c.

We should consider a child healthy at its birth as a perfect organic structure; that it possesses an innate power of generating the principle of excitability in its different organs to suit the different stimulants which are to act upon them; that the amount of this excitability is always in an inverse ratio to the amount of action which has just been produced; and that, if the proper stimulants, both internal and external, are applied in due proportion to suit the quantity of excitability existing in the organ at the time of its application, such action will be produced in the organ as is best calculated to bring about its proper development, and the proper development of all the organs makes one perfect whole; while we should never lose sight of the fact that the extent to which all natural developments can go must depend upon the internal force and pressure of the atmospheric air.

These actions in the organs of the child, if they be supplied with food of the proper quality and quantity, are as certain as any other natural event to produce their own development. None of the laws of the Creator ever fail.

The development of the body to manhood is a great work which nature has to do, and when it is accomplished there is no change in its actions ; only, they go on in a more modified form, and, if life is ended as it should be, and as the wise and good Creator designed it should be, these actions will be more and more modified until they must cease, from the laws of nature, to carry on life.

The truth of these positions is sufficiently proved by the fact that, if one of the organs of a child's system is injured, or even partially destroyed, it is easily repaired, if the other organs are kept in a proper state of action. Yet many never reach the development of manhood, and but very few the end for which they were designed by the Creator. Why is this ? is the question. We now answer. We witness so often healthful action in the organs of children, that they scarcely make any impression upon our minds until they have become so much changed that our attention is suddenly attracted to them, and then we call these changed actions "disease," and apply remedies to it as a whole ; and sometimes we analyze the thing called disease into parts, and then apply remedies to these parts, which we now call "symptoms of the disease."

If there be an increase of heat and an increase of action in the bloodvessels of the system, that is called "fever." The changed actions called "symptoms" give the distinguishing name, and the heat and increased action in the bloodvessels, called "fever," give the general name to the deranged action called "the disease." In this way has been established the belief, that there are such things as "bilious fevers," scarlet fevers," "typhus fevers," &c. In this way man made what God never made, nor ever designed should be made. And the next thing done was to inculcate in the minds of men the belief that certain remedies, the application of which to diseases constitute the practice of

medicine, could cure these diseases. Truly it may be called "the practice of medicine," but not the practice of sound philosophy, charity, or humanity.

Let us now make some inquiries into the state of the actions going on in the organs of a healthy child, before the changes take place which are to result in what is called "bilious fever," "scarlet fever," &c. We may then possibly be able to account for the causes why children oftener labor under deranged states of action than grown persons, and also why such deranged action so often proves destructive of life with them.

To make our remarks on this subject as plain as possible, we introduce an extract from the celebrated LIEBIG on animal chemistry, to show the quantity of heat generated in the human blood by the process of breathing :

"According to the experiments of DESPRETZ, 1 oz. of carbon evolves during its combustion as much heat as would raise the temperature of 78.15 oz. of water at 32° to 212° , that is, by 180 degrees; in all, therefore, $78.15 \times 180^{\circ} = 14067$ degrees of heat. Consequently, the 13.9 oz. of carbon which are daily converted into carbonic acid in the body of an adult evolve $13.9 \times 14067^{\circ} = 195531.3$ degrees of heat. This amount of heat is sufficient to raise the temperature of 1 oz. of water by that number of degrees; or from 32° to 195563.3° ; or to cause 67.9 lbs. of water at 32° to boil; or to heat 184.3 lbs. of water to 98.3° (the temperature of the human body); or to convert into vapor 11.4 lbs. of water at 98.3° .

"If we now assume that the quantity of water vaporized through the skin and lungs in 24 hours amounts to 48 oz. (3lbs.), then there will remain, after deducting the necessary amount of heat, 144137.7 $^{\circ}$ of heat, which are dissipated by radiation, by heating the expired air, and in the excrementitious matters.

"In this calculation, no account has been taken of the heat evolved by the hydrogen of the food, during its conversion into water by oxydation within the body. But if we consider that the specific heat of bones, of fat, and of the organs generally, is far less than that of water, and that consequently they require,

in order to be heated to 98.3° , much less heat than any equal weight of water, no doubt can be entertained, that when all the concomitant circumstances are included in the calculation, the heat evolved in the process of combustion, to which the food is subjected in the body, is amply sufficient to explain the constant temperature of the body, as well as the evaporation from the skin and lungs."

Here it is plainly stated whence the animal heat of the human body comes, and the great quantity of it continually evolved in the blood of an adult by the process of breathing.

We have already remarked that the natural and healthful actions in an infant's system have to produce the rapid development of its organs, until manhood takes the place of childhood. To bring about this result, the Creator has given to the organism of the infant's body the power of keeping up a much more rapid state of action in all its organs than that which takes place in the adult, so that they may not only supply their own waste of matter, as takes place in the adult, but that they may produce an excess to go to their development.

Every person who has watched the breathing of an infant, and the beating of its heart and arteries soon after birth, knows how rapid they are; and he must have observed that everything else is prepared by Almighty Wisdom for the speedy development of the infant's organs, and that, as the development of the organs progresses, all these things change.

In an adult, or in a fully developed organization, the heart does not make more than about one-half or three-fourths the number of contractions and expansions which the heart of an infant does, nor do the lungs make more than about half the number of expansions and contractions to receive atmospheric air in the same space of time. Here the question may be asked: If breathing be the great source of heat to the blood of the child, and it breathes so much faster than the adult in proportion to its size, why is not the life of the child destroyed by the great quantity produced? To this question we answer what we have before stated—that to keep up the more rapid state of the functions of

digestion, assimilation, secretion, excretion, and perspiration, going on in the organs of the child, and to supply the greater loss which takes place from more rapid evaporation from the surface, this increased supply of heat to the blood of the infant is as necessary to and as easily overcome (so long as the child is in a healthy state) as the smaller quantity is necessary to and easily overcome in the system of the adult.

But to carry on the great work of healthy development, all these functions of digestion, assimilation, secretion, excretion, and perspiration, have not only to go on rapidly, but they must also go on harmoniously and simultaneously in the system. To do this, the skin must be soft, moist, warm and yielding, so that perspiration may flow freely, and exhalation carry off the abundant heat from the surface of the body, whilst free and easy secretions and excretions may carry it off from the interior surfaces, after it has performed the duties of assisting in digestion, assimilation, &c.

The four essentials, then, to this great work of development from childhood to manhood are :

1st, The air the child breathes must be pure, and not too much expanded by heat, so that its blood may be properly decarbonized, and supplied with the proper quantity of animal heat. (Here is a fact which should be known by all mothers, that the more they confine their children to warm and expanded air, thereby heating the surface of their bodies, and destroying nervous sensibility to the presence of the stimulus of internal heat, the more they are depriving them of the power of generating heat for themselves in their own blood. This error destroys the lives of more children than any other which can be mentioned.) The blood, being thus properly decarbonized and heated, will pass freely and easily through the small arteries and capillaries to their utmost ramifications in all the organs and glands of the system. This being done, the secretions will take place easily and perfectly, and the blood will then enter into the small veins and absorbents, and return healthfully to the heart.

2d, The temperature of the air in which the child moves, and

the clothes which surround its body, should be such as to permit the animal heat, after it has performed its duty, to pass easily from the body, so as not to raise the temperature of the blood above the proper degree of 98. Otherwise, deranged action (disease) will be the certain consequence.

3d, The skin must be kept clean, and its pores free from obstruction, so that perspiration and animal heat may pass easily and freely.

4th, The food of the child should consist of matters which are not stimulating, but are nutritive in quality, and should not be over abundant at any one time.

Let these four simple requisites be complied with, and a child's system will no sooner become deranged in its actions than any other piece of mechanism, perfect in its construction and material, can become deranged without cause.

We have before stated that neither Dr. CULLEN nor his immediate followers knew anything of the uses of the lungs in the animal economy; of course, they knew nothing of the effects of atmospheric air upon the blood. But observation and experience had taught him and them that children living in bad air were more subject to deranged actions in their systems (disease) than those that lived in a purer state of the air, hence they recommended fresh air for children who were diseased, and the members of that school concur in the recommendation at the present day, but without any attempt on their part to induce mothers and others who have the management of children to understand how it acts upon them, or why it is beneficial. Whence this indifference on the part of the allopathic school we cannot conceive. Whether it proceeds from the belief, on their part, that the female mind cannot comprehend the subject; whether they fear that this knowledge on the part of mothers would make their children too healthy, and thereby encroach upon the pecuniary income of the practitioners of the healing art; or whether it proceeds from a lack on their own part of a sufficient knowledge of the subject to comprehend the vast importance it is to the well-being of the rising generation, we will not undertake to say; but

certain it is, that if mothers and others who have the control of children could only be induced to give their attention to the subject until they understood it properly (and no subject is more easily understood) it would not only be the means of saving more lives, but it would be the cause of saving helpless children from more sickness, pain, and suffering, than any other knowledge which could be acquired; while it would give to the child a firm constitution, a well-developed body, and a mind clear and free. But without this knowledge mothers often become the cause, unintentionally, it is true, of the sickness, suffering and death of their own offspring.

What sight upon earth could be more horrid, or what cruelty more dreadful, if a tyrant should sentence mothers to become the murderers of their own offspring by the slow and torturing sickness and death they now suffer! and when the little ones cry, raising their emaciated hands in supplication for a little cool, pure air, that the heat of their bodies and blood may be allowed to pass off, the mothers were compelled to wrap their sore and attenuated bodies in more flannels and blankets, until death in mercy closes the scene! And yet, this is the tyranny of ignorance practised every day upon thousands!

We have before stated that the temperature of the blood in every human being must be the same, ninety-eight degrees, or that deranged action in the system must be the consequence, although different persons have lungs of different capacities for receiving air, and of course different powers of generating heat by breathing.

And we have stated also that the Creator in his goodness and power has given to the organs of the system a range of action by which they do sometimes accommodate themselves to the circumstances in which they are placed, so as to produce a kind of artificial constitution, or apparent state of healthfulness.

These things being so, and the people being ignorant of the laws of the animal economy, they have produced, by dress, diet, &c., in civilized nations, a much greater diversity of individual personal appearance than exists among the uncivilized. Con-

sequently we see among the civilized some so overloaded with fat that they can scarcely get along, and others so lean that they have scarcely fat enough to lubricate their joints.

This subject we alluded to before when treating of the different states of the pulse in different individuals, and we then went on to state that any heat retained in the blood above the healthy point of ninety-eight degrees must act upon the heart and arteries, and produce additional action in them; and that, if appetite and digestion should be increased by this increase of action in the heart and arteries, then a deposit of fatty matter would take place in the cellular tissues, and the bulk of the body be that much increased; that is to say, until the amount of heat retained in the system by these artificial means is expended by the increased bulk of the body. Hence, we always find in fat persons a soft and weak pulse.

But, on the contrary, if the retained heat does not produce a corresponding increased power in the digestive organs, then it will be a cause of irritation to the system, and wear it down in the same proportion; and, consequently, we find in lean persons thus situated a hard and strong state of the pulse.

The people in civilized countries adopt flannels, and other clothing which are non-conductors of heat, merely as a matter of taste or pleasure, without thinking that such things are to affect the health of their bodies for good or for evil the balance of their lives. To produce the sensation of warmth is generally the object for which flannels, &c., are worn, but it should be borne in mind that one effect cannot be produced upon the system without producing others. If the additional heat act pleasantly, then increased perspiration and increased secretions take place; these lessen the quantity of the fluids in the bloodvessels; the pulse becomes soft; the bloodvessels, to use a term in algebra, become "minus," and the sensation of hunger is produced.

We must here remark that there is a mistaken idea prevalent among the people as to the proper location of the sensation of hunger, which has been the cause of much absurd practice in the disease called "dyspepsia." It is generally supposed that

hunger is confined to the stomach, and that if there be an increased or defective appetite, the stomach is always in fault; and that organ has been made to take thousands of nostrums for its cure, when in truth there was nothing the matter with it. This fact should have been known long ago by the experience of the glutton, who, although he may eat as much as three or four healthy men, and fill his stomach to distention, yet his hunger is not satisfied. The true seat of hunger is in the bloodvessels, and the continuance of the sensation in the glutton is caused by the fact that the nutritive matter of the food does not reach the blood, in consequence generally of an obstructed state of the chylopoietic vessels of the mesentery, and his bloodvessels always remain minus.

The sensation of warmth is produced at first by the additional clothing, and the accumulation of fat is the consequence (where it acts kindly); but this artificial state of things cannot last always (although it may for years), and there must be an end of it, either by the mass of flesh becoming too large for the power of the heart, or nervous system, or some other cause; then this accumulated fat takes a retrograde course, and becomes itself the fuel to supply the oxygen of the air in the lungs to produce heat and vitality to the system. This state of the bloodvessels may be said to be plus, or overfull; and so long as the supply of fat lasts, the stomach may be said to be in a passive or dormant state, and nothing that is taken into it will be digested, unless it be something which is very grateful to the palate, or very easy of digestion; consequently, almost all kinds of food which are taken into it go into fermentation, although there is in reality nothing the matter with the stomach itself.

The animal kingdom furnishes us with examples of action going on similar to that which takes place in the system of the dyspeptic patient. Hibernating animals awake healthy and fat out of their long sleep, as soon as the weather becomes a little warm. Here is a store of food laid up in the cellular tissues of their bodies, by the laws of a kind and watchful Providence, to last them until the seasons can bring forward a sufficient supply of other food

for the support of their systems. This fat is taken up by the absorbent vessels and carried to the lungs to be acted upon there by the oxygen of the air, to produce heat and vitality, and the bloodvessels are now in a state similar to those of the dyspeptic; consequently, the animal does not suffer as severely from hunger as he otherwise would, until this supply is exhausted.

The author of these remarks has amused himself by watching the progress of several cases of the disease called "dyspepsia"; and he has always found that it wore off, or was said to be cured, by some simple remedy, or some nostrum, when the state of the health was reduced down to the proper point for a change of action in the absorbent system (where the disease is idiopathic and not dependent upon some other state of deranged action); and that it was fortunate for that nostrum-vender whose remedies happened to be taken at the right time.

This change of action in the absorbent system, called "dyspepsia," is another of those wise provisions of the Creator to save the individual from self-destruction; for if he could go on putting on more and more clothing, and accumulating more and more fat on his frame, if it did not destroy his life, it would render him unfit for any of its active duties. But it is called a "disease," and he becomes a confiding patient in the hands of every one who will make fair promises of a speedy cure. In this way, laws which were designed by a kind and watchful Providence for the protection of man's life and health, are often looked upon as so many evidences of its wrath and vengeance.

This law of the animal economy has been made the fruitful source of thousands of quack remedies to draw from the pockets of the credulous and confiding their money, while a little thought on their part would teach them what to do to restore their systems to the healthy state. And these things are but carrying out the laws of life and of matter: 1st. The removal of all causes which raise the heat of the blood above the healthy point, as healthful action in the system cannot go on so long as the temperature of the blood is above that point. 2d. Healthful exercise in the open air, so that the system may be properly exercised.

and the blood properly decarbonized and purified. 3d. A light and easily digested diet. 4th. The use of a little fresh charcoal, which is the most powerful antiseptic known, when there is any tendency to fermentation in the food on the stomach, and the use of a little chalk or magnesia when there is any acidity.

It is not the design of the author to point out here the means by which what are called "diseases" are to be cured, but simply to show that deranged action in the system, which is called "disease," is the effect of natural causes; and that, by the effect of natural causes, healthy action is restored to the system.

With those individuals in whose systems heat is accumulated, by flannels and other clothing, above the healthy point of 98° , and in whom heat acts as a stimulant, and produces a hard and strong pulse, its effects are just the reverse of those described above. In these cases, the excited state of the heart and arteries wear down the flesh; and, although the stomach may receive and digest large quantities of food, yet the nourishment derived from it scarcely serves to supply the waste which takes place. The deposit of fatty matter is small in quantity, because the action in the bloodvessels is above the secreting point, and by this we discover the cause of the remarkable fact, which is known to thousands, that some people, as well as some horses, may be fattened by repeated small bleedings, and by the use of small doses of mild purgative medicines; as, by these means, the action in the heart and arteries is kept down to the healthy and secreting point.

Before it was known by the people generally, or even by the physiologist, that the heat of the blood was derived from a union of the oxygen of the air with the carbon of the blood in the air-cells of the lungs, there had been no distinct idea formed by any one of its true source; and what was and is yet called "fever heat," was supposed to be produced by what was termed, and is yet termed, the "*vis medicatrix naturæ*," by medical writers; and produced by the "*vis medicatrix naturæ*," as was supposed, for the purpose of removing the offending cause or causes of sickness from the system. Hence, this fever heat was looked upon as something rather supernatural, and above or beyond the common laws of cause and effect, and designed for good.

Fever heat therefore was looked upon as something different from the ordinary heat of the body, and as being necessary to the removal of the cause of sickness from the system. Physicians therefore came to the conclusion that it was their duty to moderate, to control, and to point this fever heat to the accomplishment of the object for which it was designed, and not to remove or destroy it entirely.

This being the general opinion as to the nature of fever heat, when diseases were collected into classes, orders, &c., with their symptoms and general characteristics defined, and it being admitted that they were frequently removed from the system by certain remedies, or, in the language of the day, *cured*, it did not require much debasement of the human intellect to believe that the remedy, as well as the disease, acted by some supernatural or specific power. Hence, the practice of medicine, since diseases were collected into orders, classes, &c., has been tending daily toward becoming more of an art than a science, and its success to depend more upon the memory of the practitioner than upon his scientific knowledge.

The art of curing diseases by specific remedies can only be gained, if gained at all, by a long course of observation and experience ; and, of course, the great mass of the people cannot give to the subject the time and attention which its importance demands ; they must, therefore, be dependent upon others for the knowledge they acquire. And, inasmuch as this specific practice relies upon the memory, and not upon scientific knowledge, the more the practitioner is guided by it, the less he will be prepared to explain to those who are dependent upon him, the true nature of the causes which operate upon them to produce deranged action in their systems. And hence, the very language made use of by such practitioners is calculated to delude the minds of their patients, and to sink them deeper in ignorance as to the causes of their suffering.

It is truly a source of melancholy feeling, to reflect upon the errors of opinion which have been inculcated in the minds of the people by the above causes, upon this important subject,

and which, for a long time to come, must continue to have their blighting influences upon their health and welfare, before the lights of science, which have been more recently discovered, can be understood by them, and a proper judgment formed as to the true nature of the deranged action which takes place in their systems.

But it is much to be hoped that all who take an interest in the happiness and welfare of their fellow-creatures will hereafter do all they can to disseminate the truth, and to teach the people that what have heretofore been called "diseases," are nothing more than deranged states of action, brought on in their complicated systems by natural causes, which violate the laws of life and of healthful development; and that health can only be restored by the restoration of that action to the proper point—and to teach them also, that what is called "fever heat" is the same with all other heat of their bodies, but is retained heat in the blood, which does not pass off from the system by the secretions, excretions, perspirations, &c., in consequence of the blood not being, at the time, in a proper and healthful state of decarbonization—and likewise that death, or the cessation of life, is the consequence of the putrefactive process taking place in the fluids and solids of the system, by the unalterable laws of nature; because all animal matter is disposed to go into fermentation and decay, even in health, at the temperature of the human blood, but is restrained from doing so by the action or the life which is going on in it; but, at the same time, the power of that action or life to continue that restraint, becomes weaker and weaker, as it deviates more and more from the healthy standard of action, either in rising above or in falling below it; while the more the heat in the blood rises above the healthful temperature of 98° , the more the solids and fluids of the system are forced by the laws of nature to yield and go into the state of fermentation and decay: and to teach the people also, that the only way to restore action in the system to the healthy standard, after it has been interrupted, or what is called "disease" produced, is by the withdrawal of stimulating influ-

ences from the system, and particularly this retained heat, by the means which nature has pointed out, of secretion, excretion, perspiration, &c., or by supplying them to the system in proportion to the quantity of excitability, or power of being acted upon by stimuli already existing in the system; and that the only means of insuring the continuance of that healthy action is by enabling the lungs to decarbonize the blood to the healthy point.

Here we are reminded of an interesting tale related in a popular periodical of the country, which, although a fiction, expresses, we believe, the current and popular opinions of the public—and, we may add, of the members of the allopathic school—as to one of the great causes of disease, and more especially of the one called “consumption,” and also as to the proper remedies to be used as preventives. This tale places the subject familiarly before the mind of the reader; hence, we refer to it, to try to correct one of the most unfortunate errors of opinion, and consequent practice, now current among the people, and one which causes so much suffering and so many deaths among the young and interesting portion of the community.

The principal incidents of the story are the following:—A young lady dresses herself for a ball, and appears before her mother for her approbation, who, after examining her dress attentively, declares that if she persists in going to the ball so thinly clad, a bad cold or something worse will be the inevitable consequence. The daughter however persists, attends the ball in her thin dress, and returns home late at night extremely cold. The mother, having great confidence in her own peculiar views as to the nature and causes of disease, and being apprehensive for the health of her child, now takes the matter in her own hands, and places her in a warm bed, in a warm room; and, as the story goes on to relate, next puts extra blankets on the bed, then gives her warm drinks, and finally places bottles of hot water in the bed. The next morning, as the mother had anticipated, she is extremely ill with a bad cold, sore throat, &c., all of which finally turn to something like consumption, but from

which, after being confined for some months, and suffering much, she at last recovers.

Our object in mentioning this story, as we before stated, is simply because the circumstances therein related are similar to the every-day occurrences of life; and because we wish to show that these common circumstances but too frequently become the causes of sickness, suffering and death to thousands, and particularly to the younger portion of our population, many of whom are hurried to untimely graves in consequence of mistaken views, on the part of their friends, of the laws of the animal economy, of those laws of life which govern living matter, whether animal or vegetable, and by the operations of which, in the dispensations of an allwise Providence, we live, move, and are enabled to enjoy the blessings of life; and also to show by these laws how, in this particular instance, the mother's warm bed, warm room, hot drinks, bottles of hot water, &c., became the causes of her daughter's sickness and suffering, in consequence of being used in violation of the laws given by an overruling Providence to govern the economy of life in an organized body; and finally to show, that if the daughter had been allowed to sleep in a room rather cooler than usual to her; to exert herself in procuring the clothing under which she slept; and to determine by her own feelings the quantity to be used, she would the next morning have been in her usual state of health.

As our main object is to prevent sickness and suffering, and as we believe the most effectual way of doing so is by impressing the true laws of life in organized living matter upon the minds of our fellow-creatures, we again state that life in an organized body is the action that is sustained in it, whether that body be a blade of grass, or the more complicated human body; and that that action is governed by the same laws in both, and is the result of stimuli acting upon an inherent principle, which we have called "excitability," implanted in that organization by Almighty Wisdom. Healthy action in an organized body is that medium point, force, or power of action, which allows all the functions of the several organs of the system to be carried on,

with ease and certainty, so that the proper developments of the whole may take place: the stomach, to digest the food and assimilate it to the blood; the liver, to secrete the bile; the absorbents, to take up the chyle and carry it into the veins, there to be mixed with the blood; the lungs, to receive the blood, expose it to the action of atmospheric air, that it may be decarbonized and warmed, and prepared for the secretions and excretions which are to take place from it, so that it may pass freely and easily from the arterial to the venous circulation, on its way back to the heart.

We should ever bear in mind the important fact that these functions of the organs can only go on properly and healthfully when stimuli—the great exciting cause to action in all the organs—is applied in due proportion to the quantity of excitability already existing in the organs, which often varies in quantity, and is dependent upon the amount of action which had just previously taken place in the organ. As a familiar example of this law, an individual may just as soon expect to see well immediately upon coming into a strong light, after living some time in the dark, as to expect all the functions of the other organs to go on easily and properly after stimuli had been withdrawn from them for a while, and then suddenly applied in excessive quantities. It is evident that by no human agency can this principle of excitability in the organs of the system be either increased or diminished by direct means, because it is innate; but human agency can control the quantity of stimuli which is to act upon it, such as light, heat, food, &c., and by that means can control, in a great measure, the amount of action which will take place in the system.

The simple but highly important fact has been long known to gardeners, that when a tender plant has been exposed to extreme cold for some time, the only way to save its life is by pouring cold water upon it, and then screening it from the warmth of the sun. Here, the principle of excitability in the plant has so greatly increased, that if the stimulus of heat is permitted to act upon it in the usual quantity, the action will be so

great as to destroy its life. So, likewise, people in high northern latitudes know that they must rub the bodies of those unfortunate persons whose lives have been nearly destroyed by long exposure to cold, with snow or ice-water, before they are allowed to receive a greater degree of heat, and thus apply warmth as gradually as possible ; whereas, if they applied it suddenly, the lives of those whom it was their object to save would be destroyed by the violent action which would follow upon the application of heat to the greatly increased excitability which follows upon diminished action from the withdrawal of the stimulus of heat. And the fact is known to almost every schoolboy, that if his hands become extremely cold, it will save him much pain and suffering if, in warming them, he first place them in moderately cold water, and by that means let them receive warmth gradually ; whereas, if he put them suddenly near the fire, the great change coming on from the same cause which would have killed the life of the plant, and of the cold human body, will produce great suffering with him. Thus we see it plainly shown in these different ways, that the quantity of stimuli which should be applied to produce healthful action in the system, should always be in an inverse ratio to the quantity of excitability already existing in the system.

To make this law of the animal economy still plainer, we shall now illustrate it by figures ; and, to do so, let us suppose that healthful action in the system is kept up by the combined influence of 100° of excitability and stimuli acting upon each other, which healthful action consists (say) in eighty pulsations of the heart and arteries, and twenty-three inspirations and expirations from the lungs in a minute of time. In the ordinary state of healthful action in the system, these 100° of excitability and stimuli we may suppose to be equally divided, and to consist of 50° of each. But we have shown that both are liable to change in quantity ; and the last one only by humanagency. Now, let us suppose that healthful action is going on in an individual's system, and that excitability and stimuli are more than 50°, and that the stimulus acting is heat. And again let us suppose that

the 50° of heat are suddenly reduced to 40° . It must be obvious that the action in the system will be reduced also, and the sensation of coldness felt. But experience has shown us that, after a slight reduction of the quantity of heat which had been acting upon us, we soon became accustomed to it (as we say), and in a short time our systems regain their accustomed actions and feelings. These changes are so frequent with us, that we scarcely take time to inquire into the causes of the effect thus produced; but, upon the slightest reflection, it must be evident to our minds that if the same amount of action is produced in the system, and our feelings are restored to their accustomed sensations, the excitability, or power of being acted upon by stimuli, has been increased in consequence of the previously diminished action, until the two principles of excitability and stimuli combined equal the original amount of 100° . And again, if we remain in the diminished temperature of 40° , until our systems have gained their accustomed actions and feelings, and we then suddenly return to that of 50° , the excited actions in our systems and our own feelings will soon admonish us that we have become much more sensible to the stimulating influence of heat. It is this increased sensibility to the action of stimuli that we mean to express by the term "excitability."

These are the changes so often operating upon the human system, and particularly in civilized society, which render it so liable to go into a state of deranged action (disease) whenever the atmospheric air is in such a state as to prevent the proper decarbonization of the blood by the lungs.

The great changes in the quantity of stimuli, and particularly in that of heat, which can operate on the human body, and yet its organs, acting by certain and fixed laws, be capable of accommodating themselves to such changes, and preserving the healthy action of the whole, are truly surprising and wonderful, particularly where such changes take place in states of the air which permit the proper decarbonization of the blood. This subject brings to our recollection the following extract from the "Journal of Researches into the Natural History and Geology of the

Countries visited during a Voyage of Her Majesty's Ship *Beagle* round the World, under the Command of Capt. FITZROY, R.N., by CHARLES DARWIN, M.A., F.R.S. :—" At night we slept at the junction of Ponsonby Sound with the Beagle Channel. A small family of Fuegians, who were living in the cove, and were quiet and inoffensive, soon joined our party around a blazing fire. We were clothed, and, although sitting close to the fire, were far from being too warm ; yet these naked savages, though further off, were observed, to our great surprise, to be streaming with perspiration at undergoing such a roasting. They, however, seemed well pleased, and joined in the chorus of the seamen's song." Here we notice the fact of the diminished excitability of the human system produced by the habits of life in civilized society, or of the power of the system to gain an increase of this principle by long exposure. But, whichever it may be, it proves the existence of this innate principle, that it prepares the body for a change of circumstances, and, as we before observed, enables man to carry into effect the original design of his Creator—to people the whole earth.

When we reflect upon the power of the organs of the system, given by a wise Creator, to sustain life and healthful action, even while the body is naked, and exposed to the bleakest situations on the shores of Terra del Fuego, and then turn our mind's eye to the burning plains of the Torrid Zone, and there see in imagination similar human beings basking in the full blaze of a vertical sun, and enjoying all the pleasures of life and health, and others of the same race going through all the changes of climate between these extremes, sustained by the same laws and powers, given by the same Almighty Power, that his creatures may enjoy the whole earth, should we not be disposed to join King David in his 107th Psalm, and say,—

" O that men would therefore praise the Lord for his goodness, and declare the wonders that he doeth to the children of men !

" For he hath broken the gates of brass, and smitten the bars of iron in sunder.

“O that men would therefore praise the Lord for his goodness, and declare the wonders that he doeth to the children of men!

“That they would offer unto him the sacrifices of thanksgiving, and tell of his works with gladness!

“O that men would therefore praise the Lord for his goodness, and declare the wonders that he doeth to the children of men!

“That they would exalt him also in the congregation of the people, and praise him in the seats of the elders.”

To which, in the humble opinion of the author, may without irreverence be added,—

“O that men would therefore praise the Lord for his goodness, and declare the wonders that he doeth to the children of men!

“For he has so fashioned their bodies, and given such laws to matter that, if they will understand and give heed thereto, they will surely live and enjoy health!”

To do which, let us continue to pursue our inquiries into those laws given to matter by Almighty Wisdom to support life and healthful action in the human body. We have already stated that, by the act of breathing, the blood is decarbonized in the lungs, and animal heat thereby given to it; that the temperature or heat of the blood must only rise to ninety-eight degrees, or deranged action (disease) must be the inevitable consequence; and that there is a point of decarbonization to which the blood must be purified, and kept so, or else there will be a constant tendency to derangement of action (disease) in the system, from the fact that the undecarbonized blood has too great a tendency to the retention of heat, is not so well prepared to give the proper influences to the several organs, nor to pass so easily from the extremities of the arteries and capillaries in the smaller veins on its way back to the heart.

There is yet another cause for deranged action (disease) in the human system, and which sometimes brings about consumption, rheumatism, &c., arising from anatomical construction or

disproportion in the size and power of the organs, &c. There are in fact but few persons whose whole systems are perfectly proportioned, balanced, and equalized throughout, so that no one organ or part is either larger or smaller, stronger or weaker than its due proportion to the rest; or whose organs, or a part of them, have not in some way been weakened. It must be evident that wherever such inequality does exist, whenever the action in the bloodvessels is excited to a very high degree by any cause, such disproportioned or weakened organ will almost certainly become the principal seat of such deranged action or disease.

This fact should never be lost sight of; and individuals thus placed should always avoid any cause which may bring on a high state of action in their bloodvessels. Now, let us suppose that the young lady alluded to in the story of the periodical, and who, it was there intimated, had brought on herself the disease called consumption, by wearing thin clothing to the ball, had a narrow chest, and of course that her lungs were rather smaller in proportion than the other organs of her system; and then try her case by the laws of the animal economy we have laid down above, and see if the deranged action excited in her system may not be more properly attributed to the course pursued by her over-zealous and ignorant mother, than to the thin clothing, or to any defect in the laws of an allwise Providence.

We have supposed that 50° of excitability and 50° of stimuli would produce eighty pulsations of the heart and arteries, and twenty-three inspirations and expirations from the lungs in a minute of time, and that these actions constitute healthy action in the system. The ball-room, we may suppose, was filled with warm and somewhat impure air, from the fact of so many breathing it; and the stimulating effects of heat, dancing, &c., would now produce such strong action in the heart, arteries, and lungs, as to endanger life, if the secretions and excretions by perspiration, &c., did not give relief by carrying off the heat from the blood as fast as it is generated by breathing; but, in

such cases, the skin generally becomes relaxed, and perspiration flows freely, and carries off the heat as fast as it is evolved to the blood. There is another circumstance of importance to be taken into consideration. The air in the ball-room was somewhat impure, from being breathed by so many, rarefied by heat, and mixed with aqueous vapor—all of which prevented the blood in the lungs from being acted upon by as much oxygen as it otherwise would have been, and of course prevented the perfect decarbonization of the blood, and the evolution of as much heat to it. Thus we see how, by the laws of a kind Providence, the blood in the body is kept at the proper temperature of 98° and health preserved.

But the young lady now starts for her home, and is immediately surrounded by cold air. The erroneous opinions which have been heretofore entertained by all, and in fact are now entertained by a majority of mankind, in defiance of the late discoveries in science, take possession of our minds, and make us lose sight of the laws of a munificent Providence, which operate to save the lives of his creatures from destruction under all circumstances. Now, let us compare the laws which operated to screen the young lady's life and health while in the ball-room from too much heat, with those which are now to act to screen her from injury by too little, and we shall find that the Creator's laws are ever kind and conservative, and that it is man's ignorance that leads to his injury. Let us remember the fact that 98° is the healthy point for the blood. While the young lady was in the ball-room, and the danger arose from too much heat, the protecting influences were the expansion of the air in the ball-room by heat, and its mixing with aqueous vapor, &c., so that there was less oxygen consumed in breathing to decarbonize the blood and give heat to it, while, at the same time, the skin was relaxed, perspiration flowed freely, and the heat of the blood was kept at the healthy point. But the young lady is now surrounded by cold air, and the danger to life and health now arises from the blood falling below the healthy point of 98° , by the rapid evolution of heat from the body. And now

we find the laws relieving the body from heat immediately changed to those which prevent it. The pores of the skin, which were before relaxed, are now closed, and no more heat passes from the blood that way; the air breathed is dense and pure, and free from aqueous vapor, so that a larger quantity of oxygen is taken in the lungs, the blood is more perfectly decarbonized, and a larger quantity of heat is given off to it, to assist in supplying that which must necessarily pass off from the surface, as well as to keep up the temperature to 98° , the healthy point.

Now let us inquire into the state of the young lady's system when she arrived at home, produced by the operation of these kind and beneficent laws of Providence to guard her life and health from injury by the sudden abstraction of heat; and, at the same time, let us suppose that her chest and lungs, or any other organs of the body or extremities, were somewhat smaller or weaker than the rest of the organization in proportion. Or, let us suppose that the lungs had been weakened by tight lacing, or the joints of her extremities by fatigue, &c., we must then understand what must be the inevitable consequences of her mother's warm room, warm bed, hot drinks, bottles of hot water, &c., upon her system, and that they were the causes of the subsequent deranged state.

The first effects upon the system produced by leaving the ball-room, and the sudden absence of extreme heat, was to diminish action in the heart and arteries, and to close the pores of the skin, and these were followed by an increase of excitability in the system, which goes on accumulating so long as the action in the heart and arteries is below the healthy point, which, as we have shown, takes place in the gardener's plant, the schoolboy's hands, &c. The air being more dense, and deprived of aqueous vapor by the absence of heat, the next effect was, a larger quantity of oxygen taken in at each inspiration, and of course a larger quantity of heat given off to the blood in the lungs. We have before shown that, where the diminution of external heat was but slight, this accumulating heat in the

blood, and the accumulating excitability in the system, will soon overcome the effect of diminished external heat, and the actions and feelings of the system return to the healthy point.

We may fairly infer, then, that the young lady's system was in a state of transition when she reached home ; that its power of being acted upon by heat was greatly increased, and the blood in the lungs was receiving more heat by the increased decarbonization of it. Now, let us suppose that the increased excitability equalled 50° , so that the whole power of being acted upon in the system equalled 55° , the healthy point being, as before stated, at 50° . In this state, her mother now takes her in hand, and, instead of doing as the intelligent gardener would have done to save the life of his plant ; as experience has taught the people of high northern latitudes to do, to save the lives of those nearly frozen ; or as the schoolboy would have done to save himself from suffering when his hands are very cold, she pursues a course exactly the reverse, and sends her into a warm room, to a warm bed, gives her heating drinks, and places bottles of hot water in the bed with her. All these additional causes of stimulation we may suppose to be equal to 20° above the common and healthy standard, which we before put at 50° , making the whole amount of stimulation acting upon the daughter's system 70° . Now, the inference is a fair one, and the result proves it to be true, that if 50° of excitability and 50° of stimuli will produce eighty pulsations of the heart and arteries and twenty-three inspirations and expirations from the lungs in a minute, 55° of excitability and 70° of stimuli will produce one hundred and twenty-three pulsations of the heart and arteries and thirty-five inspirations and expirations of the lungs in the same time. And again, if twenty-three inspirations and expirations of the lungs will warm and keep up the temperature of the blood to 98° , the healthy point, thirty-five inspirations and expirations will at least warm and keep up its temperature to 110° , the fever point. These laws of the animal economy, and fair inductions drawn from them, show us then that, under the mother's treatment, the daughter's pulse must in a short time

be increased from eighty to one hundred and twenty-three in a minute ; that her breathings will be increased to thirty-five in the same length of time ; and that the temperature of her blood will be raised to the fever point. This, we may suppose, was about the situation in which the daughter was placed in the course of a few hours after she was placed in bed.

And now, with her pulse beating one hundred and twenty-three times in a minute, her breathing forced up to thirty-five inspirations and expirations in the same time, and the temperature of her blood raised to the fever point, etc., what, we may ask, are the probable chances of her escaping without injury to some of the organs of the system. Are they all sound and perfectly healthy, and all so proportioned in regard to each other, that no one of them will have to bear more than its full proportion of this increased action ? If not, then disease or deranged action must be the consequence. And again : Is the blood in such a state of perfect decarbonization that it gives up its heat with ease, and passes from the smaller arteries and capillaries and into the veins, on its way back to the heart, with ease and certainty, so that perspiration may take place easily, and carry off the heat of the blood down to the healthy point ? If these questions can be answered affirmatively, then the mother's plan of treatment may not cause a high state of deranged action in the system of her daughter ; but if they cannot, then a deranged state is as sure to follow as there are laws to govern matter.

How perfectly the experience of the world agrees with the laws and facts here laid down ! And where either of the above named obstacles is in the way, how hard it is always found to force the organs of secretion and excretion to perform their duties ! The consequences are : heat is retained in the blood above the healthy point, nervous sensibility to its stimulating influence is lessened, and the sensation of chilliness is produced, respiration is hurried, more and more heat is given to the blood, and consequently what is called " disease " engendered. And, as we have before remarked, this disease will be of that nature

which the peculiar structure of body of the individual will produce.

Now, it is evident that if diseases were something *sui generis*—something independent of cause and effect—there would be an exact similarity in the kind and amount of them ; but this is not so : for, out of a dozen young ladies who might have been treated as the one mentioned, as many different diseases might have been engendered. In one, it might be rheumatism ; in another, pleurisy ; and in a third, consumption, etc.

The above facts and calculations should show to mothers and other persons the extreme danger of using heat and other stimulating remedies in every case where there is much increase in the excitability of the system ; which is certain to be in all persons where the common amount of stimuli has been suddenly withdrawn. This fact is so notorious that the necessity of mentioning it here seems strange ; but even at the present day thousands fall victims to the very practice which was followed by the mother in the above case. Whereas, if the daughter had been allowed to sleep in a room which was rather cooler than she was accustomed to, and under rather less bedclothing, she would have risen the next morning in perfect health and spirits.

Almost every person is aware of the fact, that it takes less spirituous liquor to intoxicate a man who has been exposed to the cold for some hours, and then enters a warm room, than it does to produce the same effect upon one who has not been so exposed, or had not gone into the warm room. The principle in this case is precisely the same as that in the case of the young lady.

It must be borne in mind that we are here treating of the laws of the animal economy, which were given by a wise and good Creator to sustain life in the body, in all the different temperatures of the air in which it might be placed, and by which the body is constantly trying to accommodate itself to the changes that occur, and that it is the violation of these laws, given to support life in the body, which excites deranged action, called “diseases.”

In the commencement of this work, we stated that no person, in justice to his patients, could be prepared to practise the healing art, or, in other words, to prevent any unhealthy state of the system (disease), or to change it back to the healthy state, who does not understand the causes of action in the body, when that action is at the proper standard of force and frequency for the healthful development of the system ; and also what causes that action to become deranged, and the extent to which that derangement has gone, either in rising above or in falling below the healthy standard. When these things are understood, and the powers and effects of all the remedies at hand are known, at least half the difficulties to success are removed, let the name given to the state of deranged action (disease) be what it may.

We must now ask the particular attention of our readers to the difference between the knowledge required of the practitioner of the healing art, according to the above views, and that required of him according to the allopathic system.

We have stated also, that about the year 1789, Dr. WM. CULLEN, of the College of Edinburgh, brought the names of all the states of deranged action (disease) with which he was acquainted from personal observation, or had heard of, into classes, orders, etc. All fevers without local affections (commonly called bilious) he attributed to the efforts of that innate, invisible, and indescribable thing called the "*vis medicatrix naturæ*," to expel from the system that hydra-headed thing called "*marsh miasma*," no trace of which has yet been found by the most industrious chemists, either within or out of the body, although they can detect the least atom of any known thing. And almost all other diseases he attributed to—what is certainly known (at the present day) to be a nonentity—cold.

To recollect the names of these diseases ; to know them by their described symptoms ; and to recollect the plan of treatment laid down for each, agreeably to its symptoms, critical days, etc., constitute what is called the allopathic system of the practice of medicine.

This was the system laid down by Dr. WM. CULLEN, and

adopted by the schools of medicine. And although since that time science has explored all the departments of Nature, and found out the real uses of the lungs in the economy of life, the true source of heat to the blood—that what is called “cold,” is nothing more than the absence of heat—that no trace of what is called marsh miasm can be detected anywhere, either in or out of the body, by the closest chemical examination; and although we have good reasons for supposing that what has heretofore been called the “*vis medicatrix naturæ*” is nothing more than a fanciful idea of the imagination, yet so tenacious are the minds of men of established dogmas, that no change, that the writer is aware of, has taken place either in the theory or the practice of medicine in the allopathic school. Cold and marsh miasm are still looked upon as the agents of evil to the system, and the “*vis medicatrix naturæ*” is still supposed to be actively engaged in expelling them from the system.

Consequently, the practice of medicine is yet based upon the same false hypothesis it was seventy years ago, and diseases are still looked upon as fixed facts, although neither the state of the atmosphere nor the habits of the people are stable enough to admit of the same practice being continued for a great many years; for, by the time the practitioner begins to think that these things called “diseases” are understood by him, a change takes place in them, and all is confusion again.

For some years previous to and at the time the writer commenced the practice of medicine (1816) almost every case of sickness partook of an inflammatory character, and the consequences were, after the deaths of thousands for the lack of bleeding, that bark and wine, which had been almost universally used in bilious remitting and intermitting fevers some years before, had to be almost entirely abandoned, and the lancet used in almost every case. Then, practitioners of medicine accused their predecessors of letting their patients die for the want of bleeding; but, at the present day, the causes of sickness and the nature of it are again changed, and are similar to what they were when bark and wine were successfully used before the year 1816.

Quinine is the popular hobby of the day, and those who use the lancet are now condemned in their turn.

These effects and their consequences must continue to follow, and the lives of the people be sacrificed, so long as practitioners of medicine continue to be governed in their practice by the name which has been given to the state of deranged action, instead of prescribing according to the nature and amount of that derangement, always truly indicated by the pulse, so kindly placed by Wisdom and Goodness where they can always be consulted.

Since the time of Dr. CULLEN, deranged action in the human system has shown itself in several forms different from those classified and treated of by him, owing to some peculiarity in the air of the atmosphere, to its greater lightness, greater quantity of carbonic acid gas, or some other cause; and whenever this occurs, as it has occurred in some parts of the world, in what is called the "true Asia cholera," the disciples of CULLEN are thrown into a dilemma, and say, "O wait until we can find out the proper remedy!" although every remedy which can be used through the medium of the stomach, &c., has been tried in vain, and millions of lives have already been sacrificed to this specific, or antidotal doctrine, while the evident facts that the breath returning from the lungs cold, and the pulse being soft and weak, show conclusively that the cause of derangement lies either in the air-cells of the lungs being already too much occupied by carbonic acid gas—which cannot be thrown off, owing to its great specific gravity when compared with the external air—or, there is some defect in the external air itself which prevents the blood in the lungs being oxydized, or decarbonized, and heat given to it, to the proper extent. The remedy therefore for this deranged state of action in the system must be one which acts through the lungs, and not through the stomach.

We have now endeavored to show :

1st. That no persons are prepared to practice the healing art successfully; or, with justice to those who employ them, who do not understand in what life in the body consists—what con-

stitutes healthy action in the body, and the power of life or action to resist the natural tendency of the solids and fluids of the system to yield to the laws of putrefaction and decay, which produce death.

2dly. How the people, by a misapprehension of the laws of life in the body—and particularly since the year 1789, when Dr. CULLEN introduced his methodical nosology and classification of diseases—have been induced to look upon deranged action in the system as disease, as something which has will and power of attack, to give pain and torture, and to destroy life in the body, instead of understanding disease to be merely deranged action, produced by natural causes acting by natural laws, in a highly complicated organization.

3dly. That life in an organized body is action, produced by natural causes, and acting by natural laws; that healthful action in such a body is that amount and force of action which produce the development, the absorption, and reproduction of all the organs, solids and fluids of the body with ease and certainty; and that what is called disease in such a body is nothing more than an interruption to such healthy action, and its consequent defective development.

4thly. That life or action in an organized body is an effect produced by an application of “stimuli” to an inherent principle in the organism, which principle we have termed excitability, or the power of being acted upon; and that this principle of excitability during life is being increased in the organism by the withdrawal of stimuli and the consequent diminution of action which follows; or, it can be decreased, and always is diminished by the application of an increased quantity of stimuli, and the increased action which must follow.

5thly. That the allwise and good Creator has guarded from external harm all the most important organs of the body, and has made the pulse (the true index to the action going on in the whole system) plainly perceptible at the most convenient point for inquiry about the whole system, so that all persons may not only make themselves acquainted with the state of action in their own, but with that going on in their neighbor’s system, if

required, that the divine command of neighborly love may be carried out.

We have endeavored to show also that the heart and arteries are impelled to action by stimuli acting upon their inherent excitability, and are governed in their actions by the same laws of forces, atmospheric pressure, and powers of resistance, which govern ordinary mechanical contrivances, made of elastic materials for propelling fluids ; and that the indications to the sense of touch in the ends of our fingers, such as of strength, weakness, frequency, quickness, and slowness, in the propelling power ; and of emptiness, fullness, softness, engorgement, and resistance in the elastic tube which receives the fluid propelled, are the same in both.

6thly. That atmospheric air is composed of two gases : oxygen and nitrogen ; that its oxygen acts upon the blood in the lungs, a portion of it uniting with the iron, and another portion with the carbon of the blood, and both giving it heat, called "vital" or "animal heat," the great stimulant to action in all the organs of the system ; that this heat, after it has performed its duties as a stimulant, has to pass off from the system by the various channels designed for it by Almighty Wisdom, such as evaporation, perspiration, secretion, excretion, &c., so as to leave the blood at the temperature of ninety-eight degrees ; or else derangement of action in some of the organs must be the inevitable consequence.

And we have endeavored to show likewise that the action in the system is the only preventive against putrefaction and decay in its solids and fluids, even at the healthful temperature of ninety-eight degrees. Whenever therefore the heat of the blood rises above that temperature, or falls below it, the action of the heart and arteries, and consequently of every other organ of the system, must be affected by it, and that action, as it recedes further and further from the healthy point, in consequence of an accumulation of heat, or of a diminution of it in the blood, becomes less able to resist, in the solids and fluids of the body, the laws of fermentation and decay, and of course the approach of death.

CHAPTER IV.

REMOTE AND PROXIMATE CAUSES OF DISEASES, OR DERANGED ACTION IN THE HUMAN SYSTEM.—ACCUMULATION OF HEAT IN THE SYSTEM—ITS EFFECTS, &C.—WITH OCCASIONAL REMARKS UPON THE THEORY AND PRACTICE OF MEDICINE AS TAUGHT IN THE SCHOOLS AT THE PRESENT DAY.

In our foregoing remarks we have endeavored to make plain and comprehensive the great physiological truths, that the wise and good Creator of the human body has so formed and arranged it in all its organs and parts that it is perfect in itself as a whole, and that it is prepared to carry on the operations of life; and that too with a healthful state of action, and to the perfect development of the system, provided that all the stimulants to organic action be supplied in such quantities, in such purity, and with such regularity, as healthful organic action requires; and that the organs of the system can no more carry on the actions of life, and particularly those which produce their own proper and healthful development, when those stimulants are withheld, are in an impure state, or are supplied in excessive or deficient quantities, than a machine which is made by human hands can continue its motions, and that too in a regular and proper manner, after the power which moves it is entirely taken away, or applied in excessive or deficient quantities, or in an irregular manner. And why is this so? but because all contrivances by which motion is produced have to be governed by immutable laws, and where that motion has to be regular, the supply of the impelling power has to be regular also, whether that power be a weight, a fall of water, the pressure of steam, or the warmth of the blood, which is the impelling power to the

action of the heart. These laws come from Him who is the Author of all, and who cannot err.

It is true, as we have before endeavored to show, that in the human system particularly, there is a wonderful display of the wisdom and goodness of its Divine Author, in the wide range of conservative action which has been given to the powers of the different organs to adapt themselves to the circumstances in which they are placed ; but instead of our attempting to understand these conservative powers of the organs of the system, we have remained satisfied ourselves, and assisted in deluding others by the use of unmeaning expressions, such as—"The body has gotten used to it," "It has become acclimated," "Use is second nature," &c.

Had these powers of adaptation not been given to the different organs of the system—for instance, to the stomach, that of digesting the different kinds of food taken into it, its power of indicating the want of nourishment in the system, and of rejecting it when that want does not exist ; to the skin, the power of throwing off heat by relaxation, and of retaining it by contraction ; to the lungs, in their power of expansion and contraction to receive more or less atmospheric air, and thereby more or less oxygen gas to purify and warm the blood, as slight changes of purity, expansion, and temperature in the air might require ; to the liver, in its power of secreting more or less bile, and thereby relieving the blood of an excess of carbon, and of heat ; to the intestines and other viscera, in their powers of increasing or diminishing the secretions and excretions ; to the eyes, in their power, so beautifully shown in the dilatation and contraction of the pupils, to suit the different quantities of light acting upon them at the time, &c.,—mankind could have been nothing more than poor, miserable, and suffering beings, endowed, it is true, with the power of locomotion, but they would have been afraid to exercise the privilege to any extent. For, on every change of food, on every change of temperature, of purity in the air, of light, &c., pain and suffering would have been to them the inevitable consequence ; and to people the earth's surface, a different

species of the human family would have had to be created for every degree of latitude upon the globe.

But the good and allwise Creator has given these ranges of action to the organs of the body, and the consequences are, that man ranges the earth from the equator to the poles; he ascends the highest mountains, breathes their rarefied air, bears their cold, and looks up to heaven's light with confidence; he descends to the lowest depths of the deepest valleys, enjoying their cooling shades; his eyes are again ready to penetrate their most gloomy recesses; and his stomach is ever ready, when the body requires nourishment, to receive whatever food the climate may produce, and with its associated organs, by their powers of assimilation, secretion, excretion, &c., to convert it into matter similar to that of his own body. In this way man's system is renovated, and he enabled to pursue the high destiny designed for him by his Creator.

But it should be constantly borne in mind by every one that this power of range of action in the organs of the system to keep the body in a healthy state, must from necessity be limited, and can only exist in its full extent so long as the blood is in the state of perfect decarbonization; and that all exciting causes of deranged action in the system produce their effects more and more certainly, and more and more powerfully, in proportion as the blood is more and more perfectly decarbonized and pure.

From this it will be seen that it requires concurrent causes, quite different in their natures, to exist in the system at the same time, to produce that deranged state of action "called fever." These causes are an imperfect decarbonization of the blood as the remote cause, which disposes the organs to imperfect secretions, excretions, &c., and an accumulation of animal heat in the blood over and above the healthful quantity of ninety-eight degrees, as the immediate or exciting cause of deranged action, which stimulates the heart and arteries to a state of action above the healthy point. The secretions and excretions being obstructed by the state of the blood, these two causes act upon each other, and what is called "fever" is produced. The force and

violence of this fever are always in proportion to the extent of the two exciting causes.

The fact of there being a remote cause, and an immediate, or exciting cause of fever, has long been known to writers on fevers; and these two causes have been treated of by them as the remote and the proximate, but without the true nature of what they treated of as the remote cause being properly understood by them; nor could it have been understood twenty years ago, because the compound nature of atmospheric air was not then well and generally understood; nor were the important functions performed by the lungs in the animal economy properly understood; but these causes of ignorance upon this highly important subject do not exist now; and it is high time that the public mind should be properly informed.

When the blood fails to be decarbonized to the healthful point by the act of breathing, it of course fails to have that general and salutary effect upon the secreting and excreting vessels which it otherwise would have, and the secretions and excretions will become small and inefficient. Of course, as the animal heat generated in the blood by breathing is mostly carried off from the body by these means, that heat will accumulate in the blood provided it be generated in the blood as fast as it was before. In fact, it must be evident to every observer that, when the blood is thus imperfectly decarbonized, the secretions and excretions partially obstructed, heat disposed to accumulate in the blood, and the nervous system either impaired in its operations, or excited to a greater degree of activity, the whole system cannot be as well prepared to guard itself against the effects of disturbing causes, such as sudden changes from cold to heat, with its consequent increase of excitability, from dry to wet, fatigue, excess in diet, in drink, wounds, poisons, the virus of eruptive diseases, &c., &c., as it would be if its blood were in a proper state and condition for carrying on all the functions of the different organs in a proper manner. We will state here a fact in illustration of the truth of this position, and in proof of the power of the organs of the system to keep up a healthy

state of action in the body after some of the most important of them have been dreadfully wounded and lacerated, where the blood was in a perfectly healthy state at the time the wound was received, and continued so until the cure was effected. An officer of distinction in the army of the United States, in the late war with the Republic of Mexico, was struck by a grape-shot, which passed entirely through one of the lobes of his lungs. But yet, with this dreadful wound, scarcely a slight fever ensued. He recovered in a short time, and was enabled to resume, and did resume, his arduous duties again in the field. This case of rapid and perfect recovery was an unprecedented one, and can only be attributed to the admitted purity of the atmospheric air in the neighborhood in which the wound was received. Had this wound been received at a place where the air was impure, we are justified in saying, from all former experience, that death in a few days would have been inevitable. But the perfect decarbonization of the blood, in consequence of the purity of the air, enabled the organs of the system, by their conservative powers of action, by secretion, excretion, perspiration, &c., to throw off heat from the blood as fast as it was generated, and all other causes of irritation to the system from the wound, as extensive as it was; in that way the heat of the blood was kept down to the healthy point of ninety-eight degrees.

By the tendency which the Creator has kindly given to all organized living matter (so long as the action which is going on in its vessels is kept at the proper state of action for its own reproduction) the organs of this officer's system were able to supply the matters required, and to reproduce the parts of the organ carried away by the ball, and healthful organization was again restored. Here we cannot fail to remark that practitioners of medicine, by claiming for themselves, or for their remedies, that "they cure this disease," "that wound," &c., take an attribute to themselves, or to their remedies, which has been given by the Creator to organized matter alone, as one of its laws from the beginning. For we venture the assertion that never yet has the action going on in the human system, (how-

ever much "disease," as it is called, there might seem to be) been brought to the proper standard, as indicated by the pulse, and kept so, but that in a short time the system has righted itself, and all disease disappeared from it; and that if there be a wound of that body, or of any of its organs, such wound is equally sure to be healed.

We have now endeavored to show that so long as the action going on in the heart and arteries, as indicated by the pulse, is at the healthy standard, healthy development of the organs is sure to follow; and that, to ensure that state of action in the pulse, the temperature of the blood must be kept at the standard temperature of ninety-eight degrees. These laws of the animal economy being absolute, it must be evident to our readers that any change in the state of the atmospheric air, which can affect the process of breathing, and thereby the decarbonization of the blood in the lungs, the secretions and excretions, and the regular transmission of heat from the blood, must tend to the production of deranged action, or what is called "disease" in the system.

We now mention some of the changes, taking place in the state of the atmospheric air, which affect the decarbonization of the blood in the human system, and of course its health and life.

The first of these changes to which we invite the attention of our readers is that of the different degrees of gravitation or pressure of the atmospheric air upon the earth's surface, and all other bodies at different times. This phenomenon of nature, however much it may affect the whole economy of life and health, has never, so far as we are aware, been looked upon by writers on the causes of disease as one of these causes, any farther than is implied in the following extract from the *American Medical Lexicon*: "When the weight of the air diminishes, the weather is often bad, and we feel listlessness and inactivity. Hence invalids suffer in their health from very sudden changes in the atmosphere." This single remark upon this highly important subject shows conclusively how little the state of

atmospheric air and its changes have heretofore been supposed by medical writers to have to do with the deranged states of action in the human system called "disease," although, at the time the above sentence was written, the fact was then fully known, that the blood is decarbonized in the lungs by the process of breathing, by the oxygen of the air, and that all the animal heat of the system is derived from the same source.

We cannot account for this neglect of so important a subject, by writers on the causes of diseases in the human system, in any other way than by supposing that they have been perfectly satisfied with the sufficiency of the causes heretofore assigned, and look upon that nondescript thing called "marsh miasma contagion," the effects of that innate and indefinable power in the system called the "*vis medicatrix naturæ*," and the effects of that *lusus naturæ* denominated a "bad cold," as being amply sufficient to account for all the different states of deranged action which can possibly take place in the human system. We take the liberty of saying here that we feel confident that if any other branch of study or of practice, which is called scientific, besides that of medicine, were at the present day to use such vague and indefinite terms, and to come to such highly important conclusions, upon which the lives and wellbeing of millions of human beings depend, from such indefinite and unmeaning expressions, and such false premises as "marsh miasma," the "*vis medicatrix naturæ*," "bad cold," &c., such branch of study or of practice would not be called scientific one year longer.

But to return to our subject. Atmospheric air surrounds the earth and presses upon its surface and all other things, at the level of the ocean, with a force generally equal to fifteen pounds to every square inch. But owing to causes which are not perfectly understood the pressure varies, sometimes a little more, and sometimes a little less. This pressure is measured by an instrument called a barometer.

It must be evident therefore that every development which takes place near the surface of the earth, whether it be the

growth of a child from infancy to manhood, of the germ of a seed to a plant, or to a tree; whether it be a solid changing to a fluid, or a fluid becoming gaseous or aëriform; whether it be the vapor which forms the clouds, first changing into water, and then into ice; or whether it be any other solid matter changing into a fluid, or a fluid becoming a solid—all such developments must take place under this pressure of fifteen pounds to the square inch, and be governed by it; and that whenever the pressure is changed, and becomes more or less than fifteen pounds to the square inch, such development must be affected likewise, more or less. Consequently, if fifteen pounds to the square inch be the pressure of the atmosphere at which the human system is developed to the greatest degree of perfection, then any change from that amount of pressure must be injurious to life and healthful development in it.

We have before stated that, to guard as much as possible the lives and health of His creatures against the injurious consequences of these changes of atmospheric pressure, the allwise Creator has by His laws so ordered things that the lungs in all animals are somewhat more capacious for the reception of atmospheric air than is sufficient for the decarbonization and warming of their blood to the healthful degree, so long as the air is pure and under this pressure of fifteen pounds to the square inch; and that the number of respirations can be increased for a short time at the will of the animal. By the laws of the same good and watchful Creator, the lungs of those who are born and reared in mountainous situations, where atmospheric pressure is less than fifteen pounds, are more capacious and capable of receiving a greater volume of air at each inhalation than the lungs of those who have through life breathed air at the level of the ocean, that they may be compensated for the loss sustained by the pressure being taken off, and the consequent increased lightness of the air. These facts should speak volumes to the inquirer after truth upon this all-important subject. But, alas! how little they have been attended to!

We are informed that in Great Britain, and probably it is

about the same in the United States, the amount in variation, indicated by the barometer in the pressure of the atmosphere at its greatest extremes, is equal to 2.83 inches, which, upon the whole surface of a man's body of ordinary size, would equal a change of pressure of 2,464 lbs.

If there be any truth in this statement, and we suppose there is no doubt of its truth, well may we feel a degree of "listlessness and inactivity"; and truly may the convalescent and hypochondriac complain of the weather when the air which presses on him is thus suddenly lightened, and his breathing made more difficult; for, just in proportion as the weight of the air is taken off, does the labor of inflating the lungs to their full extent with air, increase. Here again we meet with another of those wise provisions of the Creator for preserving the life and health of the air-breathing creature. For, in proportion as the air of the atmosphere becomes more and more expanded and lighter, it becomes also purer, as carbonic acid gas and other substances now settle out of it, and leave it purer for the purpose of respiration. This interesting fact may be witnessed in the falling of smoke when the air is light, whilst, on the contrary, when the air is heavy, the smoke rises with some degree of force. And the purity of the air on the tops of mountains attests the same fact.

So essential is the proper decarbonization of the blood to the continuance of life and healthful action in the system, and so easily is it done when all things concur, that the act of breathing seems to be almost an involuntary one; but, in truth, it is no more so than those of eating and sleeping, all being dependent upon the demands made by the system. When we breathe pure air, pressed into the lungs by the force of fifteen pounds to the square inch, the blood is decarbonized so easily that we scarcely feel the labor of breathing; but as soon as a change takes place in the state of the air, either by the pressure of the atmosphere being partially taken off, and the air consequently rarefied, or by its becoming mixed with other volatilized gaseous matters, then the labor of breathing is increased in proportion, and we feel the effects in the fatigue produced by the slightest

exertion of the other muscles. Hence the lassitude of the hypochondriac or convalescent patient when the air is suddenly rarefied, or is rendered impure by being mixed with other gaseous matters.

So with digestion. If the bloodvessels are minus, and want a supply of chyle, as is indicated by the sensation of hunger, and the stomach is supplied with only the proper quantity of nutritive food, then the process of digestion goes on without the least distress; but when the bloodvessels are not minus, and the chyle not wanted, the stomach cannot digest the food put into it, however nutritive the food may be. Here again we witness the conservative effects of the laws of a wise and good Creator; for, if every individual's desires in this respect could be gratified, that is, if his stomach could digest all the food put into it, and his heart could continue to send all the nourishing matter to the surface of the body and deposit it there in the cellular tissue in the form of fat, he would soon render himself a useless being, and fit only to encumber the ground.

So with sleep. Sleep is the repose of the organs of sense and of voluntary motion, that they may recover the vitality lost. If that vitality has not been expended, sleep can no more be induced than the stomach can be induced to digest food when the bloodvessels are already plus, either by a supply of chyle from the stomach, or by the absorption of fat from the cellular tissues by the absorbent vessels; or than the lungs could breathe rapidly after the blood is already decarbonized to the healthy point.

All the causes of change of atmospheric pressure are not known, but inasmuch as it is supposed that the atmosphere is some fifty miles in depth, as the surface of the earth is irregular, and the air constantly in a state of disturbance near its surface, we may readily suppose that the upper atmosphere is also in motion; that it rolls about like the waters of the ocean, and in this way produces the different degrees of pressure.

We have next to mention the expansions of atmospheric air produced by the heat of the sun, and artificial means, which, under certain circumstances, are more injurious to life and health

than the expansions we have already mentioned. It must be evident that when both of these causes of expansion happen together, which they often do, health and life are still more endangered, but when the air thus expanded is filled with all the exhalable matters which can be kept suspended in it by the heat of the sun, or artificial heat, life and health in the human system suffer to their greatest extent.

In the succeeding remarks we always refer to Fahrenheit's thermometer. By this instrument, heat, or rather its effect, is divided into degrees, the freezing point of water being placed at 32° , the boiling point at 212° , the heat of human blood in a healthy state of the body at 98° , and the fever heat of blood at 110° . Although the climate in which we live, say 37° N., ranges in temperature from the lowest of winter cold, say 20° below zero, to the highest of summer heat, say 100° , (a variation of 120° ,) yet the human body may not only live, but enjoy health through all this change, and its blood remain at the temperature of 98° .

What evidence this is of the wisdom and goodness of the Creator, so to construct living matter, and to give it such laws as enable it to pass through changes of temperature which would subject all matter devoid of life to the laws of fermentation and decay! But this is not all, for experience has abundantly proved that the human body, when in health, can pass some time in air of a temperature much higher than 120° —perhaps double that temperature—and still undergo no change in the heat of its blood, and no derangement of action in its organs.

The physiologist who is tired of thinking, or who is not disposed to investigate the laws of nature, may rest here, and come to the conclusion, with the learned Dr. CULLEN, that all this is the effect of the force of life. But if he will look a little further, he will find that this "*vis medicatrix naturæ*" is nothing more than the carrying out of God's laws. He will find also that, as soon as any of these laws of life and healthy action in the system are violated, this "*vis medicatrix naturæ*" has no power beyond the law; that there ensues a derangement of the action going on

in the system in consequence of such violation, and a tendency to diseased action, and death is the immediate consequence.

The causes which prevent the heat of the blood rising higher in a healthy state of the system than 98° , we have, we hope, abundantly shown to be the proper decarbonization of the blood by the process of respiration, or by this and the secretions of the liver conjointly, constant circulation of the blood in the system, and the secretions, excretions, perspiration, and evaporation which take place from it. The effects of internal and external heat upon the human body are obviated by the same laws which prevent the accumulation of heat in ice when exposed to it under these circumstances : Place a piece of ice in boiling water, and suffer it to remain there until half of it is melted. On taking it out, the remainder will be found to be very near the same temperature it was when put in. Here we find that solution and evaporation have carried off the heat as fast as it came into contact with the ice. So will the secretions, excretions, perspiration, and evaporation carry off the heat of the system down to the healthy point of 98° , under almost any temperature of the air, and in defiance of almost any quantity of clothing, provided the blood is kept in the proper state of decarbonization, and the secretions, excretions, &c., go on healthily, which they are now almost sure to do.

We make this statement to show that it is not the primary effect of heat upon the organs of the system which produces derangements of action in them ; but that those effects are secondary, and caused by the heat expanding the air breathed, and thereby preventing the perfect decarbonization of the blood in the lungs by the process of breathing. This causes the vessels of secretion, excretion, and perspiration to fail in the performance of their duties ; the fluids do not pass off, and heat and an over quantity of blood remain in the bloodvessels. The heart and arteries are thereby excited to increased action, and derangement of the action of the system is the consequence.

To form in our minds a proper idea of the effects of heat upon all matter, and particularly upon animal life, let us imagine, if

we can, the total absence of heat from the earth, and picture to our minds the appearance all things would put on. Of course everything of earth, air, and water, would be in a solid state, and without motion or life.

Now, let us suppose that a small quantity of heat is admitted to all things ; of course, some few, which have the greatest affinity for heat would first soften, and then become fluid ; others would be softened, whilst the great mass would be left apparently unaffected. Now, let us suppose that another portion of heat is admitted, those things which had first become fluid would rise into an æriform or gaseous state ; those which had only become soft would become fluid, and some which were not affected before would become softened.

Let us suppose that we are on the parallel of 37° , N., and that heat had thus been admitted until the thermometer indicated the temperature of 20° below zero. We should still see all the water of the world in the solid state, or ice ; and some other things still fluid, which, upon the next admission of heat, would take on the gaseous or æriform state. The air of the atmosphere would be pure, consisting entirely of oxygen and nitrogen, and greatly condensed. Man would move through it with vigor, because his blood would be perfectly decarbonized, his digestion strong, his skin clear, his eyes bright, and his whole appearance indicating health and strength.

Let us suppose, again, that another portion of heat is admitted, and that the thermometer indicates the temperature of 50° . The ice is now all gone ; some forms of matter become fluid, and others gaseous. Nature has now taken on her medium state, and every form of life, adapted to this latitude, is at the height of its enjoyment. It is true that heat has raised into the æriform state other things besides oxygen and nitrogen ; and that it has also somewhat expanded the air, but it has done no more than the Creator in His bountiful goodness had amply provided for in the structure of His creatures, by the range of action in the organs before mentioned. But the operations of the globe and all other things have to go on, and yet another and another addition of

heat has to be made to the temperature of the air, to carry into full effect the will of the Allwise Creator, until we find it brought up to 100° or 120° higher than it often is in the winter season at 37° of latitude.

In this state of things, the author thinks the following facts and consequences must be evident to the minds of the most superficial observers : that the atmospheric air is now greatly expanded ; that many things before in a fluid state are raised into the gaseous or aëriform state, and mixed with the air of the atmosphere ; and that myriads of carbonaceous, saline, and earthy particles, which would otherwise have subsided, are now held suspended by aqueous vapor ; that this being the case, the lungs must now be distended to an unusual capacity to receive air enough into them to decarbonize the blood to the proper point of purity ; or else, the number of their inspirations and expirations or breathings, must be greatly increased in a given time, to produce that effect ; or, otherwise, the blood remains unpurified.

If we admit that the lungs can be so increased in their capacity, or in their frequency of breathing, as to receive air enough in its heated, expanded, and mixed state, to decarbonize the blood to the proper point of purity, we shall find that, by either process, the quantity of heat generated in the body, and that acted upon by the external heat of the air, would require the evaporation and excretion of more fluid matter from the body to keep the blood at the healthy temperature of 98° , than the organization could bear, and still keep the system in a healthy state of action.

Here again we must advert to the wisdom and goodness of the Creator, in so constructing the animal body, and giving it laws for its preservation, under all the changes to which it is subject by nature. The very states of deranged action to which it is subject during hot and impure states of the air ; the effects of the medicines which experience has proved to be best to restore that action to the healthy state ; the food prepared in hot climates to increase the action of, and the secretions from, the liver ; and just the reverse kind of food being found to be best in

cold climates, &c., all go to prove conclusively the physiological fact that the liver is an adjunct to the lungs in decarbonizing the blood in hot weather ; and that so long as the temperature of the blood requires it, all its excess of carbon is consumed in the lungs by the oxygen of the air ; but so soon as the temperature of the external air rises high enough for the heat of the blood to be maintained at the healthy point of 98° without it, a portion of the carbon of the blood is carried off in the form of bile by the secretions of the liver.

It must be obvious to every one, that it is impossible to make an accurate estimate of the different amounts of expansion of the atmospheric air, and of its various grades of purity, under the different degrees of pressure and heat to which it is subject from January (when we may suppose that it is at its greatest degree of condensation, both by atmospheric pressure and from the heat of the sun being withdrawn to its least amount ; and also at its greatest degree of purity, from the subsidence of all volatilized matter,) to August, when we may suppose that it is in the situation just the reverse of what it was before. But as our object is the establishment of a principle, and not that of a single abstract fact, if we come within the bounds of probability or possibility, it is all that is required by the following calculation :

The climate of 37° , N., is subject to a change of temperature of from 20° below zero in winter to 100° , the highest degree of summer heat, equal to a variation of 120° . One of the first effects produced upon almost all bodies by the addition of heat is that of increasing their bulk or volume. Now, let us suppose that the addition of 120° of heat to atmospheric air, at the temperature of 20° below zero would, with the addition of the other things which that quantity of heat would volatilize, increase a given amount of air to double its former volume. A quantity of air, then, which would in the winter, at 20° below zero, fill a space of 6 inches by 6 inches, would, in the summer, when the thermometer stands at 100° , fill a space equal to 6 inches by 12 inches.

It must be evident, then, that this volume of air, mixed at

the same time with all the extraneous matters which 120° of heat can keep suspended in it, cannot, even if the human lungs were not limited in their capacity and frequency to receive it, decarbonize the blood with the same ease and certainty that it would in its more condensed state ; but when we take into consideration all the circumstances which attend it, we must see that a failure to do so is most certain.

We mention here a case in point, to show that the worst kind of derangement of action ("malignant" or "yellow fever" as it is called) can be produced, or at least continued, simply by the air breathed being kept continually in a highly rarefied state, and without other aids from exhalations, &c.

The following circumstances were related to the author by one of the sufferers, who told it without any view of sustaining any preconceived opinion. Its truth can be easily substantiated, as it happened on board one of the United States armed vessels :

In the month of September, 1847, the yellow fever broke out among the crew of the United States steamship *Alleghany*, in one of the ports of the Gulf of Mexico. This steamer was new, and built almost entirely of iron. She was kept as clean as a new vessel could be, and of course there could have been no other cause in originating and continuing the disease than the one assigned. There were ninety-nine souls on board ; seventy-five had the fever, and fifteen died.

As soon as it was discovered that the disease was on board, the usual remedy for getting rid of it, and which had always been successful, was resorted to, that of going to sea ; but, in this case, without success. The steamer was taken to sea, and remained out for a length of time, but without any diminution in the violence of the disease, or of the number taken with it. The vessel was again taken into port, and the fires put out. It was not until several days that the disease ceased.

It is necessary to account for and explain this particular case ; and it should never be lost sight of. This steamer was propelled by HUNTER's submerged wheels (fortunately for the lives of thou-

sands they are now out of use), which required that the fires to generate steam should be raised and kept at a much greater heat than is usual or necessary on board of other steam-vessels. This fact was known to all on board of steamers with wheels of this description (of which there have been several) but consequences of the kind related above were not anticipated, although the engineers who served on board of them suffered greatly, and had to be relieved at very short intervals. But that fact was looked upon as a momentary inconvenience, and not likely to produce disease and death.

In this case it is evident that this deranged action in the system (called "yellow fever") was caused by the extreme rarefaction of the air in and immediately around the steamer, thereby preventing the proper decarbonization of the blood; and, at the same time, by the stimulating effects of heat upon the heart and arteries, keeping up a state of action in them above the healthy point.

To no other cause than this can we rationally look for an answer to the question,—What produced yellow fever on board of this steamer? Every precaution which experience and good sense suggested was taken; but yet the "disease," as it is called, continued until the fires were put out, and the air cooled. If we take the rarefied and heated state of the air as the cause, how beautifully and harmoniously all the laws of life, and the resulting consequences agree! But if we do not, then confusion and doubt confound the mind.

The above facts go still further in proof of the assertion before made that "action in an organized body is the life of that body." (Here we wish to be understood as alluding to life, so far as the physician is concerned. The safety of that life depends upon his having a correct understanding of what it is he is trying to save when prescribing in a case of deranged action, or disease.) And that healthy action in it is the amount, force, and proper distribution which enable each organ, or part of the body, so to perform its duty that all may go on harmoniously for the production, absorption, and reproduction of the whole; while, at the

same time, the blood is properly decarbonized, and its temperature kept at the standard of 98°.

It is generally known that, as the surrounding air increases in temperature above the freezing point, so do all animal and vegetable matters which are exposed to it, after life is extinct in them, increase in their tendencies to putrefaction and decay. The first effect of the putrefactive process is to take the oxygen gas from the air; and the second is to form carbonic acid gas by a union of this oxygen with the carbon of the decaying matter, and diffuse it in the air. This carbonic acid gas, and all other matters, whether solid or fluid, which can be kept suspended by the combined influences of heat and moisture, now mingle with the air and take up a portion of space in it. Consequently, when such air is breathed, it is deficient in oxygen, both to the extent of the quantity taken by the decaying matter, and to the quantity of space which the carbonic acid gas and other matters take up in the air. Of course, every human being having to breathe such air must suffer accordingly.

Here we have the positive but simple laws of nature brought before us so plainly, that we cannot fail to understand the causes which produce deranged action (disease) in the human system—how to remove them, and, in some measure, the effects already produced. Now, let us compare this statement of the laws of nature with the description of the causes of disease in the *American Medical Lexicon*, and come to a fair conclusion as to which is best calculated to bring the mind of the reader to a proper understanding of this all-important subject: “The atmosphere of cities—as New-York, Boston, Providence, New-London, and Philadelphia—have been frequently so contaminated by corrupting animal provisions, by full and overflowing privy-pits, by the abominable masses of rottenness of which the new grounds near rivers have been made the receptacle, that in the last ten years of the 18th century, they suffered great mortality, and were almost deserted by their inhabitants.”

The atmosphere in and around a house in the country has been known to be rendered unhealthy and deleterious by a nasty

duck-pond or mud-hole near the door, by putrid cabbages in a cellar, and by the dung of swine, poultry, and human creatures, accumulated on all sides. The atmosphere of ships between decks is generally very impure; pestilential air, or infection, is produced there from human excretions, from corrupting provisions, and decaying cargoes, &c.

After reading such an array of causes of disease, it may be supposed by some that if they can keep clear of those enumerated there may be no others to affect them. It often happens, indeed, that pestilential matters are suffered to accumulate in large quantities, and no disease produced by them. One year the inhabitants of a city may almost wallow in filth, and yet remain healthy; but the next, even when these causes of sickness are not so apparent, they may suffer dreadfully.

These facts keep the minds of the people constantly in doubt as to the true causes which produce disease, and to this may be attributed their indifference. Whereas, if one or a hundred of these causes were sure to produce disease they would as surely be removed. Hence the necessity of knowing the true cause.

Here let our readers pause a moment, and ask themselves the following questions: Is it likely that the things above enumerated will, singly, or collectively, as they may have accidentally been mixed together, and under different circumstances, as to heat, air, moisture, &c., by the process of fermentation, always produce the same specific poison to the human system, and thereby the same disease? Or, is it more probable that all matters, whether vegetable or animal, which are capable of fermentation and decay, serve by that process to take oxygen gas from the air, to fill it with carbonic acid gas and other exhalable, but non-respirable matters, and with the aid of heat and moisture render it so expanded and impure as to be almost wholly unfit for the process of respiration and the proper decarbonization of the blood, thereby becoming the remote causes of deranged or diseased action in the animal system; and that such deranged or diseased action is always in proportion to the imperfectly decarbonized state of the blood, to the activity of the nervous

power, and to the quantity of the immediately exciting cause (heat in the blood above the healthy point of 98°) acting upon the system?

We are aware that it may be supposed by many persons to be immaterial as to how these questions may be answered—whether in favor of the marsh-miatic or specific-poison theory, or in favor of that of the imperfect decarbonization of the blood. But it is not immaterial for many reasons. The theory of specific poisons fails in being supported by any of the known laws or properties of matter, and no trace of any such poison has ever yet been found, although all the combinations into which the elements of animal and vegetable matters enter by the process of fermentation and decay are now pretty accurately known; nor do the effects of medicines which have been found most successful in removing bilious diseases from the system indicate at all the truth of this theory of specific poisons, while it must be admitted by its friends that all theories drawn from false premises must not only be false in themselves, but must lead to wrong practice by those who believe in them, and to erroneous opinions among the people. But, on the other hand, all the discoveries which have been made for the last sixty or seventy years by scientific research into the nature of atmospheric air, and of the effects of breathing upon the blood, and also the experience of the practice of medicine, and particularly that of the effect of calomel in promoting the secretion of bile, and thereby the decarbonization of the blood, and consequent relief of deranged action dependent upon that cause, all go to prove the truth of the theory, that bilious affections are simply the effects of obstructed respiration, and the failure to decarbonize the blood.

We are aware that an attempt has been made by an ingenious writer of our country to divide those subtil exhalations into animal and vegetable, or kino and vegeto poisons, and to determine the difference between the diseases produced by them. But if the author of that attempt met with any better success in his practice we are not aware of the fact. But we should suppose that to determine whether diseases caused by filthy pig-pens or

duck-puddles, were the effects of the kino, or the vegeto poison, would require rather more time than a practitioner of medicine could well spare. Here we see the interminable labyrinths into which false theories may lead the minds of men upon this important subject.

But it may be freely admitted that decomposing animal matters may take oxygen gas from atmospheric air in larger quantities and more rapidly than vegetable matters in the same time, and that they dispel or diffuse into it a larger quantity of carbonic acid gas and other gaseous non-respirable matter, and thus render it sooner unfit for the proper decarbonization of the blood, and to a greater extent; and in this way, be the remote cause of the most violent states of deranged action (or disease) to which the human system is liable. But this does not effect at all the principle upon which the remote cause of deranged action in the system is founded.

Let us now mention some facts in support of the views we have heretofore expressed, facts we deem not only explanatory of the true nature of the remote causes of deranged action in the animal system, but as proving that those causes act, not as directly or immediately exciting, but as remote or preparatory. These facts also prove that the remote causes of deranged action are not only comprehensible, and may by prudent forethought be removed, but may, under some circumstances, be made subservient to man's prosperity and wealth.

It is almost universally known that when virgin soil is brought into cultivation, and particularly that having no calcarious matter in it, it becomes in a few years poor from cultivation, and that during this process it produces among the people of its neighborhood the diseases called "bilious fevers." Here we have two important facts brought to our consideration: 1st, That the soil of this virgin land is diffused into the air by cultivation, and that fermentation, exhalation, &c., must take place: 2d, That bilious intermitting and remitting fevers are the consequences. It is stated by Mr. EDMUND RUFFIN in his "Essay on Calcarious Manures"—and the truth of his statement

has been proved by the experience of his neighbors, and by that of the present writer—that after the application of calcarious matter (marl) to lands becoming poor from cultivation, they not only regained their former depth of soil and fertility, but the people of the neighborhood were relieved from those bilious intermitting and remitting fevers to which they had been previously subject, in the fall of the year; and were now more liable to inflammatory diseases, accompanied by bilious symptoms in the winter season.

Here we would ask every candid reader,—What do these facts prove, but the beauty and harmony of the laws of a Good and Wise Creator? For, whilst these lands were cultivated without some material mixed with the soil to prevent fermentation, and to fix their carbonaceous matters in them (lime is the proper one) that carbonaceous matter must be exhaled into the surrounding air by heat, moisture, fermentation, &c.; consequently the land must become poor, the surrounding air unfit for animal respiration, and the people subject to bilious intermitting and remitting fevers. But so soon as a proper exercise of the mind and body of man took place, and lime was applied to the soil, a change took place for the good of all.

Destructive fermentation in the component parts of the soil, and the exhalation of its carbonaceous matter are now prevented, and a portion of the carbonic acid gas of the surrounding air attracted, absorbed by the lime, and fixed in the soil. The land is enriched, the air purified, and man made healthy to enjoy both.

These facts should be regarded of great importance, not only by those who use lime as a means of health and wealth upon their lands, but also by the physiologist and philanthropist, as affording conclusive proof, both by analysis and synthesis of the soil, that the matters which compose the fertile part of it, when exhaled into the air, tend to render it impure and unfit for healthful respiration, simply by its presence there taking up space, and not from its possessing any poisonous qualities. This tendency of exhalations from soils to produce deranged action in living animal bodies was perceived by Dr. CULLEN (as we have before

stated), and he tried to account for it by supposing that this “miasm,” as he termed it, possessed directly poisonous qualities; that it is taken into the stomach with the food, saliva, &c.; and that it there acts as a cause of offence, which the “vis medicatrix naturæ,” (the supposed guardian of the system,) tries to expel. When it succeeds easily in doing so, but little derangement of the action going on in the system is produced; but when it does not, then the derangement becomes great; and if it cannot succeed at all, then death is the consequence. But, to proceed :

When the blood is in this state of imperfect decarbonization, although the heart and arteries may keep up their healthful force and frequency of action, and although the heat of the blood may remain about the same as when properly decarbonized (the cause of which will be more fully explained hereafter), there is a constant tendency to irregularity in the secretions and excretions (as the experience of every person has shown), and also in the ability of the organs to be acted upon by stimuli. Hence, the variableness of sensation felt, chilliness, &c., by every person whose blood is in this state; and whenever any exciting cause of deranged action happens, such as sudden changes from heat to cold, and then to heat again, fatigue, loss of sleep, excess in eating or drinking, wounds, &c., deranged action, or what is called “disease,” is produced; and the extent of that deranged action or disease will be in proportion to the extent of the imperfect state of decarbonization of the blood, to the power of the exciting cause, and to the state of the nervous system; and now if any one organ of the system is weaker than the others, the principal force of the derangement or disease will take place in it. This is what is called disease. The blood being in this state of imperfect decarbonization, the deranged action in the system the consequence of it, and the liver being the auxiliary of the lungs to assist in decarbonizing it (as we have before tried to show) the good effects of calomel when used judiciously, in almost all cases of deranged action which requires an increase of the secretions, can be easily accounted for without looking on it as a specific.

The following circumstances, which took place under the eye

of the author, give full confirmation of the truth of the views expressed above, and the successful practice which was followed in accordance with those views give further evidence of their truth :

The lands in the State of Alabama, which are known by the name of " The Canebrake," have so much lime that their owners have heretofore believed the air above them would remain pure enough for animal health whatever might be the quantity of rotting matter left upon the surface. It is now the month of February. This being a cotton-growing plantation, there is necessarily a large quantity of cotton seed on it to be disposed of in some way. They were hauled out and dropped in heaps a month or two ago for the purpose of being ploughed into the soil. But unfortunately there has been so much wet weather that the ploughing could not be performed, and the seed is undergoing the process of fermentation or rotting. The consequences are, that many of the people upon the farm are made sick in just such a way as might have been expected from the circumstances, and in perfect accordance with the laws of the animal economy laid down in the foregoing pages. The practice to relieve them has been equally successful, as none have died, and none have remained in the house over a few days. That practice was governed entirely by the principle laid down above. Besides the frequent rains, there have been many changes in the temperature, and the people have been alternately exposed to heat and cold, wetness and dryness. But these causes alone could not have produced sickness, as the experience of former years abundantly proved ; and if they could, all should have been sick. But these causes produce changes of sensation, increased and depressed states of the excitability of the system to be acted upon by stimuli ; and they also produce temporary changes in the secretions and excretions of the organs. All of which, by the good and wise laws given by the Creator, could be overcome by the organs so long as the blood is kept at the healthy point of decarbonization.

But here was this great quantity of cotton seed rotting, and vitiating the air.

Now let us see what effects could be produced upon the air by fermentation and decay, and by that means upon the blood. The most learned and accurate chemists have never been able to detect any other effect produced upon the air by the fermentation of any body than those we have already mentioned, of taking oxygen from and diffusing carbonic acid gas into it; and, from the known composition of seed, nothing extraordinary can be expected, but possibly a little ammonia and some oleaginous and carbonaceous matters; neither of which can be injurious to the blood, or to the organization, any further than by taking up space, and thereby excluding that much oxygen from the blood.

We have stated that these cases of sickness took place in the month of February, and that the people were necessarily exposed to changes from warm to cold, and then to warm again, and occasionally to wet clothes, &c., which changes necessarily increased, and depressed the excitability of the system, and rendered the secretions and excretions irregular. With those who were taken sick, or, in other words, in whose systems deranged action became fixed, the skin was hot, and the pulse strong, hard, tense, and somewhat oppressed; and there was a disposition to local inflammation either in the pleura, lungs, throat, or face. The practice was to bleed until the pulse was relieved from oppression, hardness, tension, and strength, above the healthy point; and to use cold water freely externally, by sponging, &c., until the stimulus of heat was removed down to the healthy point, or as near as possible. As soon as the action in the blood-vessels was reduced by these means, within the range of the power of calomel to produce a purgative effect, doses of that medicine were given to assist in producing the secretion of bile from the liver; and thereby assist the lungs to decarbonize the blood to the healthy point. These effects being produced upon the system, its action would be just as sure to regain its healthy standard as that the sun will rise again, or that any other of Nature's laws will be carried out, if these effects are produced before destruction of the organization takes place in some part of the system, and if the sick could have healthy air to breathe; but, as

it was, the action in the system had in some instances to be assisted by the administration of some medicine which gives to the organization artificial strength to support more effective breathing, until the lungs can decarbonize the blood to the proper point. When this is done, then health is restored. The medicine resorted to in the above cases, where the system was too much weakened in the state of the air they were in to restore the healthful decarbonization of the blood, was quinine, which in these cases was effectual. But, in the selection of a remedy in similar cases to the above, the practitioner should be governed by the tendency to inflammation indicated by the pulse, and never use quinine so long as there is tenseness and hardness in them.

There is nothing more remarkable in the present state of medical science than the fact that all authors and practitioners of medicine think that, if they can only show that their peculiar opinions are supported by the opinions of GALEN, HIPPOCRATES, CELSUS, BOERHAAVE, &c., there can no longer be any doubt of their correctness and propriety, although these eminent men lived before the nature of atmospheric air was known, before the uses of the lungs in the animal economy were understood, before the source of animal heat, and even before the circulation of the blood in the human body, had been discovered. It is certain that if these men lived at the present day, and knew no more upon these subjects than they did know, they would now be looked upon as ignorant. This shows the pedantry of the schools, and at once explains why the practice of medicine has not advanced simultaneously with the other sciences.

In the earlier ages of mankind, and before science had shed its benign influences over the mind, whatever phenomenon in physics could not be readily accounted for and explained, was either made a god of, or at least supposed to possess supernatural powers, for good or evil, which would be exerted over the destinies of men. In this way was given to the dissolution and decay of the animal body not only a name but a body, and to that body attributes and powers; thus we have death personified. Should

we then be surprised at the fact that simple deranged states of organic action, which could not be accounted for, and which might end in the death and dissolution of the body, were, in former times, looked upon as something supernatural, or caused by supernatural agencies, apart from simple violations of the laws given to govern life and healthful action in the human body? Or should we be surprised that, even at the present day, these deranged states of action are looked upon by the people as things which can only be removed from their bodies by some powerful agent, when we know that all, or nearly all who now study the subject of medicine professedly as a science, still continue to give to these states of deranged action, which they profess to believe are nothing more than effects of violated laws, long and unmeaning names, such as "King's evil," "St. Anthony's fire," "St. Vitus's dance," &c., and continue also to talk of them as of individualities which have power, will, &c., and of "fever," and "fever heat," as though there was really something in the body called "fever" which possessed the power of raising the heat of the body at its own will and pleasure? We should think not.

The author of these remarks is not prepared in his own mind to determine whether persistence in this course is the effect of fear, on the part of practitioners, that the people at large will soon learn too much, if plain and simple language be adopted; or whether there is still clinging around the subject a remnant of former superstition which makes them unwilling to disbelieve in the materiality or supernatural origin of disease; and hence they cling a little to all sides.

Persons who have studied the subject properly, and are acquainted with the great recuperative powers of the animal system, by the exercise of its own functions, to absorb and carry away matters which have become offensive, or are not required; to supply other matters, and reproduce parts of its own organs, &c.: as, for instance, after one of its large arteries has been wounded and then tied, a part of one or more of its organs rendered useless by wounds, &c.; or who have seen the perfect

and rapid reparation of a broken bone; or the whole body restored after it has been reduced by long-continued deranged action or disease, &c.; or who have witnessed the fact, in the first instance mentioned above, of the blood of the system seeking new channels to carry on the circulation, bringing back again health and vigor to the injured part—such persons have truly cause of thankfulness to the Author of all Good, that he has given such laws and attributes to the system, by which effects like these are brought about. But it is humiliating for them to know that these wise laws and attributes have been almost completely lost sight of, both by practitioners of medicine and the people, in consequence of erroneous theories, by the use of improper language, unmeaning names, &c., and that they have been substituted in the minds of the people by the belief that pills, powders, drops, &c., composed of vile nostrums, are the true causes of cure in all cases of organic derangement.

The existence of these laws and powers in the animal economy should convince every one that the human system when deranged is always tending, or as it were endeavoring, so long as life and perfect organization exists, to regain a healthy state of action; and that if the necessities of food, of heat, of air for breathing, and the demands of the senses are all supplied in due proportion, deranged action never could exist.

It follows, then, as a matter of course, that whenever derangement of action does take place, it is the consequence of a deficient or excessive supply of some of the requisites to life and health. The practice of medicine therefore should resolve itself into these objects: to find out what constitutes healthful action in the system—what are the causes of that action, and how they should be regulated. We have before treated in this chapter of the effects of atmospheric pressure and its changes upon the human body; of the effects of breathing atmospheric air, in the decarbonization and calorification of the blood; and of that heat as a stimulant to give action to the heart and arteries. We now propose to treat of that heat as the cause of sensation, and to show that the sensations of heat, warmth,

chilliness, and coldness are frequently delusive, and are the effects of the presence of heat either acting upon or passing from the body, and of the peculiar state of the nervous system at the time. These sensations could not have been formerly understood, nor are they now properly understood and appreciated, either by practitioners of the healing art or by the people, which is one great cause of failure of success in the practice of medicine, and particularly in the disease called "consumption."

We have before shown that when Dr. CULLEN arranged diseases into classes, orders, etc., he knew nothing of the uses of the lungs in the animal economy, and of course he could know nothing of the source of heat to the blood or to the body; that the theory of fever and of disease in the allopathic school at the present day is just the same as that of CULLEN; and, in fact, that his treatise on fever, on disease, and on the practice of physic is still the text-book. Of course it must be admitted by the members of that school, that the great and important discoveries which have been made in the last sixty years have had no effect either upon their theory of fever, or upon their practice to remove it from the system. Although one of the essentials to constitute fever, by their own theory, is too much heat; although the source of this fever heat is now known, or should be known, to every member of that school; and although they know, or should know, how much this fever heat increases the tendency of the solids and fluids of the system to yield to the laws of fermentation and decay, (or, what the faculty substitute for these: "gangrene" and "mortification,") and of course to death, yet in their practice there is no more effort made to get the system cooled by simple, easy, and effective means than there was in the days of CULLEN; and, we very much fear, not so much.

Here we must again beg the undivided attention of our readers whilst we explain the nature of the sensations of heat, warmth, chilliness, and coldness, as well as the cause of their uncertainty. We shall endeavor to throw some new light upon the subject of these sensations, a knowledge of which we deem

essential to every individual, not only for the preservation of his own health, but to enable him to assist in restoring health to others.

To the human body has been attributed five senses : namely, seeing, hearing, smelling, tasting, and feeling. Until the source of animal heat to the body was discovered, all these senses seemed to rest upon the same general principle, viz., the existence of an internal nervous power in the organ to be acted upon, and the application of the external cause of sensation ; and that in the nerve of the eye, of the ear, of the nose, of the tongue, of the skin and flesh, existed the power of being acted upon, while in the external thing applied existed the peculiar stimulant to the nerve to be acted upon. Thus far, the subject is easily understood ; because, if a loss of one of these senses take place, as, for instance, that of seeing or hearing, it is directly known that there is either a lack of the external stimulant of light or sound, or a lack of sensibility or internal power in the nerve to impression from the stimulus of light or sound. If we apply a strong light to the eye, or a loud sound to the ear, and then our eyes fail to see in a weak light, or our ears fail to hear a weak sound directly afterwards, we know at once that the nervous sensibility of the eye or of the ear has been for the time undergoing exhaustion. These laws apply to all the sensations of the body, except to those of heat, warmth, chilliness, and coldness, and they apply to the latter so long as the temperature of the blood is at 98°, and the blood itself at the proper point of decarbonization.

The feeling of warmth from the presence of external heat is as much a sensation as that of seeing with the eye, hearing with the ear, or tasting with the tongue. The power of seeing can be exhausted by too much light, the power of hearing by too loud a sound ; so can the power of feeling warmth be exhausted by too much or too long-continued heat, externally applied. But the heat of the blood, before it has been evolved, has no effect in giving the sensation of warmth to the body or limbs, until it passes from the blood, and becomes free or sensible heat. Hence,

the heat of the blood above 98° in a person who is said to have a fever, does not give to that person a sensation of warmth, until it has passed from the blood; but, on the contrary, this heat, whilst in the blood, serves to lessen the sensibility of the nerves; so long, therefore, as it remains in the blood, it serves to produce the sensation of chilliness instead of that of warmth.

By this we see how many, who have already too much heat in their blood, are induced by their deceptive feelings to use more clothing, warmer rooms, etc., to produce more external heat, and who are laboring under what are called "slow fevers," "rheumatisms," "acute" and "chronic consumptions," &c., they are thus induced to assist in forcing the solids and fluids of their bodies into waste, from the continued excited action of the heart and arteries.

From the lack of a proper understanding of these simple laws of the animal economy, more suffering has been induced, and more lives sacrificed, than from any other cause; and bodies must continue to suffer, and lives to be sacrificed, until those laws are understood.

As we have already had occasion to remark, when the blood in the human body is kept decarbonized to the healthful standard, its temperature, by the secretions and excretions, will remain at 98° . Now, so long as this is the case, the sensations of heat, warmth, and coldness, will give true indications of the state of the heat of the blood, and of the system generally. In this state of the system the sensations of chilliness, ague, fever, etc., cannot exist. But it must be evident that, as soon as the blood fails to be thus perfectly decarbonized, if the secretions and excretions were to go on to the same extent as before, the temperature of the blood must necessarily fall below 98° . This would be destructive of life; but, as Nature is always conservative, the laws of the organization require that some of the secretions and excretions should fail to go on to their previous extent, and, in this way, keep up the temperature to 98° . These consequences are familiar to the experience of every one.

The blood being in this state of imperfect decarbonization, and

its heat at 98° , by the partial suspension of its secretions and excretions, it follows, as a matter of course, that if the same quantities of food and drink are taken into the stomach, and pass, as they commonly do, into the circulation, a plethora, or overfulness of the bloodvessels, must take place; and that, from these several causes, the state of the nervous system must be affected; the brain will be overfull of blood and oppressed; the heart will labor harder than before to move this larger quantity of blood; the nervous power move irregularly; and, of course, the sensation of chilliness (sudden transitions from heat to cold, and from cold to heat, succeeding each other) will be induced. If the body, or parts of it, are now exposed to changes from heat to cold, and then to heat again, to wet and dry, fatigue, etc., the secretions and excretions will be still further suspended, and a "bad cold" produced. In ninety-nine of every hundred cases, the individual affected is induced to believe, from the language of the schools of medicine, and from his sensations of chilliness, that he has in reality something cold in him, and he tries to drive it out. If his remedies produce increased secretion and excretion (perspiration), the heat of the blood is carried off, and the patient relieved; but if they fail to do so, in consequence of the extent of the derangement, they will certainly do harm, and make the case worse, by increasing the heat of the blood and the action of the heart and lungs. The increased derangement of the action of the system is, however, never attributed to the remedies, as it is always supposed that the disease is too strong and inveterate to yield, and has of its own will become worse.

It would not be a difficult matter to show that all the errors of opinion which have taken possession of the mind, as to the true nature of the sensations in the animal system, may fairly be attributed to ignorance of the compound nature of atmospheric air—of the uses of the lungs in the animal economy—of the effects upon the blood of oxygen gas, by its taking from the blood the superfluous carbon, uniting with the iron accompanying it in its circulation through the arteries, and at the same time giving to it animal heat, the cause of all action in the body. For the

existence of this ignorance none are to blame, as this important knowledge is but recent. It is truly pleasing to know that, previous to the introduction by Dr. CULLEN of his nosological arrangement, by which he gave currency to the idea that diseases are fixed facts, which had as much permanency in their natures as the different classes, orders, etc., of animals or plants, many of the best-informed men of the ages in which they lived believed—although science had at that time advanced too little to give them any clear idea of the truth—that there was a dependence of animal and vegetable life upon some connection, either by chemical affinities or by mathematical arrangement, with the material things which surrounded them; and that an interruption of that dependence caused a derangement of action in the solids or fluids.

To give our readers as practical a view as possible of the effects of heat confined in the blood by the use of flannel, and to show that at least many, if not all, the diseases mentioned in CULLEN'S nosology and classification as individualities, may be produced by the same cause, and "cured" by the same remedy, the author will give here a brief description of his own experience and suffering for some twenty years of his life, and of his final recovery and subsequent enjoyment of a greater share of good health than is generally enjoyed by persons of his age; and that too in defiance of what seems to many to be a life of carelessness and exposure.

Whilst attending medical lectures in the city of Philadelphia, in the winter of 1812-13, he was induced, by persuasion and some fear of the effects of cold, to commence wearing flannel next the skin. For ten or twelve years his health continued tolerably good, but subject occasionally to attacks of bilious fever; nearly three years of that time were spent in the United States army, as assistant surgeon, during the last war with Great Britain, and the remainder in country practice in some of the lower counties of Virginia. About the year 1825, his health began gradually to give way. This decline commenced with frequent sensations of oppression and chilliness.

The next most prominent symptoms were occasional soreness

of the tongue, alternating with derangement of the stomach and bowels. When diarrhea would come on, the mouth and tongue would be relieved. To these succeeded a dull pain in the side, shoulder, and then an enlargement of the liver and spleen was visible both to the touch and sight. The usual remedies of calomel, in large and small doses, for the purpose of producing salivation, tonics, acids, astringents, &c., were resorted to, occasionally with partial success, but without any permanent good. Faith in flannel was unbounded, until the whole body and limbs were incased in red flannel, as that was supposed to have most virtue as a restorative. But, in the year 1833, the powers of the system seemed to be nearly exhausted, and death apparently would have been the inevitable result. Both the liver and spleen were now much enlarged; diarrhea very troublesome and exhausting; in fact, so much so that no remedy gave more than temporary relief. Water was evidently accumulating in the chest and in the extremities; and a distressing cough, with some difficulty of breathing, was equally troublesome; while the whole system was greatly emaciated.

It is but too frequently the case that pain, sickness, and exhaustion of the body, are not the only causes of suffering to the weakened and sensitive mind; for public opinion sometimes, although perhaps unintended, adds a severe sting. While some people expressed the belief that these pains and diseases were the effects of a laborious country practice; and others, that they were the effects of climate, location, &c., there were yet others who were wise enough in their own conceits to suppose, that they were the effects of spirituous liquor drank secretly. But time and these complicated diseases wore on to the fall season of the year, and not the strongest astringents would put a temporary check to the diarrhea, nor opium give temporary ease to the distress of both body and mind. Having gone to bed one night with the expectation of passing it sleeplessly and painfully, my mind adverted to the opinions of some persons as to the causes which had produced my bad state of health. Believing that no effect could be produced without an adequate cause;

knowing myself to be innocent of the habit of which I had been suspected, and also that neither personal exertion, exposure, nor climate, had been sufficient to produce all the effects I was laboring under, I began seriously to review the acts of my previous life which could possibly have an influence upon my health. My memory reverted to the putting on of flannel, perhaps without sufficient reflection. As fatigue and exposure were not sufficient to produce this state of health, the question then arose, "Might not the effects of flannel worn next the skin, when added to those of exposure and fatigue, be sufficient?" This led me to reflect upon the influence of flannel upon the system. The conclusion was, that it could have no other but that of retaining heat in the blood.

The next ideas which passed through my mind were, "What can have produced the enlargement of my liver and spleen? What can have kept up the high state of action in my heart and bloodvessels, which I have so long been trying to reduce, and which has resulted in the enlargement of those organs? What effect can Nature be now trying to produce by the almost constant discharge from the bowels, and the deposit of water in the chest, and in the cellular membrane? Is it not, by all this, trying to get rid of the very heat I have so long, and so sedulously, tried to retain in my system by flannels? For what do we sometimes bleed our patients, and give them purgative medicines, if it be not to carry off heat? What have I been doing for myself for the last eight or ten years? And what has Nature been trying to do for me, but to counteract the very effects I have been producing by wearing flannel?"

Life, as may be supposed, had been a burden to me for a long time, and any prospect of relief was viewed without doubt or fear. The simple question I put to myself was,—“Shall I try it?” As soon as the thought presented itself that the flannel I had been wearing had been the counteracting cause, both to Nature and my own exertions, by bleeding and medicine, to get my system clear of heat under the name of “fever,” the resolution of taking it off was decided upon and executed. But sup-

posing, unphilosophically, (as I had no proper idea of the quantity of heat which had to pass from my body before the sensation of cold could be fairly produced,) that I should soon be cold, the flannel was laid by the side of the bed, so that it might be resumed again as soon as required.

It was in October when this experiment was tried, and the nights cool. For months before, an hour's sleep was as much as I had enjoyed at any one time, on account of restlessness, pain, coughing, and diarrhea; the reader therefore may imagine my surprise when I awoke the next morning from a refreshing sleep, having passed the night without moving. I had fallen into this sound sleep while waiting for the heat to pass off, and feeling the sensation of coldness, as I had expected. When I first awoke I almost doubted my own identity; and on getting up my feelings were really strange. I felt as if no specific gravity was left in me, and that I should rise from the floor. Although weak, I almost believed that I was quite well. During the night there had been no cough, no diarrhea, restlessness, or suffering; of course internal heat had been the cause of them all, as flannel had been the cause of its retention in the system. After some reflection, I gave way to what I believed would be the dictate of public opinion and prudence, again putting on flannel. I retained my new feelings until about the middle and hottest part of the day, when restlessness and weakness returned, with diarrhea, cough, &c.

The second night I again took off the flannel, and again enjoyed a most delightful sleep, and in the morning felt the same sensations of relief. I then believed that I had had sufficient evidence to justify the belief that the flannel, by its retaining too much heat in the blood, had been the whole cause of all I had suffered, and that time alone could determine whether that heat had been the cause of the enlargement of my liver and spleen, of dropsical effusions, etc. I then made a promise never again to wear flannel, or anything of a like nature, next my skin; or in any other way to suffer my system to become oppressed by the accumulation of heat in my blood.

In the course of a few days I perceived, and without the assistance of medicine, that the organs of my system were resuming their proper functions. The absorbent vessels had begun to perform their proper duties, and the water in the cellular tissues was being carried off by the kidneys. The stomach and bowels soon acquired a healthy vigor, and in a few months the liver and spleen were reduced to their proper size; in fact, health was restored to all the organs of my system.

From that time to the present, as far as the customs of society allow, and as far as circumstances permit, I have adhered to the resolution never to suffer my blood to get above 98° by pent-up heat. If, at any time in the day, or on going to bed, I felt that it was too warm, producing the sensations called “a little fever,” I endeavored to get rid of it by taking off a part of my clothing, or by the free use of cold water, or by lying without cover until the effect desired was produced. It is a novel assertion, but it is nevertheless true, that of all the tyrants upon the earth, a flannel shirt is the greatest; and the person who wears it, the greatest slave. For it will not let him eat, drink, sleep, or even cool himself, when he wishes to do so.

Never yet has any person taken what is called a “bad cold,” or “fever,” by simply being exposed to cold, however intense it may have been. But it is true that when a person’s blood has been kept heated above the healthful degree by flannel, or anything else, and is not properly decarbonized, one or more of the organs being suddenly cooled, and then heated again, a “cold” or a “fever” is almost certain to be the consequence. By the laws of a wise and good Providence for the government of the system, and by following them out in practice, we have enjoyed eighteen years of almost uninterrupted health; and we truly say that, during these eighteen years, we have not felt as much bodily suffering in every way put together, as we did in one year whilst using flannel.

It may readily be supposed that every person who sympathizes with his fellow-creatures, and who, for his own restoration, feels a sense of gratitude toward the Author of all Good, will be

disposed to warn them of the cause of their sufferings; and more especially when it has been discovered that one cause has produced diseases enough to occupy a large part of the nosology of the schools; and which belong to different classes, orders, etc., of that arrangement, known by "hepatitis," "spenitis," "hydrothorax," "anasarca," "diarrhea," "cough," "difficulty of breathing," etc.; and that this same cause is now producing diseases treated by the members of the schools of medicine as separate and disconnected.

Let it not be supposed that these "diseases" are all the forms of deranged action, which too much heat confined in the blood by flannels or other non-conducting organs can produce; for these, as well as "colds," "consumptions," "rheumatisms," "pleurisies," and other inflammations, as well as "dyspepsia," etc., are but the effects of this single cause, modified by the state of decarbonization of the blood. They can be removed, as those were under which the writer labored so long, by the abstraction of heat, and by the judicious promotion of decarbonization, provided this is done before the derangement of action has gone so far as to produce disorganization.

Nor are these "diseases" all the unfortunate consequences which but too often follow from too much heat being retained in the blood. For there are many states of the system which are brought about by the skin becoming extremely relaxed from long-continued and excessive perspiration, caused by the heat retained by flannel; and it is thereby made to carry off so much of the watery and saline portions of the blood, that the kidneys and bladder have nothing left to do but to carry off the earthy and coarser parts.

It should be borne in mind by every person, that the covering of every internal surface of the body is but the continuation of the cuticle and finer parts of the external skin, and that, when the skin becomes relaxed and weakened, the strength and healthiness of the covering of all other surfaces become relaxed and weakened. Hence the derangements of the system termed "falling of the womb in woman," "falling of the rectum," etc.

The skin now carrying off by perspiration much of the water, and some of the saline matter, which should have passed off by the kidneys and bladder as urine, the urine is thicker with earthy matter than it should be. Chemical combinations may now take place, and calculi be formed in the kidneys or bladder, which otherwise would not be produced, and gravel be the effect of thus driving nature out of its course.

Every physiologist admits that there is a certain quantity of heat necessary to the blood of every human being, to keep up the action of the system to the proper point, and that any diminution or increase must be destructive of healthful action; he also admits that the secretions and excretions of the body, and particularly perspiration, take place more easily in some states of the system than in others. The addition, then, of every piece of clothing which is a non-conductor of heat, and which is added when the system is not in the state to perspire freely, must have a bad effect upon the person who adopts it.

To understand this properly, we must bear in mind the all-important fact that all warm-blooded animals, and particularly the human race, generate heat faster than the quantity to be fixed by the act of secretion requires, as is the case with the simply red-blooded; and that, unless the surplus is easily and readily carried off, disease and death must be the inevitable consequences. Perspiration was intended to carry off all accidental accumulations of heat; but, if the surface of the body is constantly kept in a relaxed state, injurious consequences must follow.

Let it not be supposed by the reader, from what is stated above, that the writer pretends to determine for others what is the proper quantity of clothing, flannels, etc., which each individual should wear. All that is aimed at is: to point out how animal or vital heat is produced in the blood; the quantity which must always be in it, to give to all the organs of the system their full and free action, so as to produce their complete development; to explain how, both naturally and artificially, this heat may accumulate, and be followed by injurious, if not fatal effects in both the solids and fluids of the body; and to show how this accumulated heat can be carried off most safely and easily.

When increased heat from increased clothing, flannel, etc., acts beneficially upon the system, it produces easy digestion, lightness, and strength of feeling. Now, all is right. But when, after eating, there is a sensation of overfulness about the stomach, and a general sense of lassitude and weakness over the whole system, all is wrong.

There has been much said and written about individual constitution, and hereditary diseases. Here, again, one error in theoretical opinion forces the adoption of others of similar character. If we believe in the individuality or self-existence of diseases, or that disease in the system is anything but deranged action going on in it, we have to entertain the extravagant notion that disease, as a whole, is inherited by the child from the parent. But, on the contrary, if we look upon life in the body as an effect—as a consequence of stimuli acting upon an organized body—we must see at once that, where the organization in different bodies is similar, and they are acted upon by the same stimuli, and in the same proportions, the actions and their effects in both must be similar.

No one denies that the form and proportions of the organs of a child are frequently handed down from the parent, but the actions or life going on in the body of each individual, are results of direct external causes upon the form and proportions, and of course controllable.

By reason of the doctrines taught in the schools that diseases are individual somethings dependent upon form, parents who labor under the disease called consumption, look with sorrow upon those of their offspring who partake of their own form and proportions; whereas, if they take the right view of the subject, they will see that the action in their own system has been forced on too fast by the stimulus of vital or animal heat; and that all they have to do to save their offspring from the same condition is to lessen that heat by permitting it to escape more easily from the body.

Life, then, in an organized body is the action going on in that organization; action is the effect of stimuli acting upon an innate

excitability; healthy action in the body is that amount and force of action best producing, by secretion and absorption, the construction, absorption, and reconstruction of all the organs and parts of the system; the blood in its circulation is acted upon by the atmosphere, the oxygen of which takes away the useless carbon of the blood, and imparts vital heat. So long as the blood is properly decarbonized, the vital heat is reduced, (by exhalation, the secretions and excretions,) to the healthy standard, and retained there; but, so soon as the proper decarbonization of the blood fails to be affected, the system is unprepared, as before, to keep up the regular action of production, absorption, and reproduction. In this state of the blood, as the remote cause, whenever there is one exciting to deranged action—such as: the sudden withdrawal of heat from the body, or some of its parts, with the consequent accumulation of excitability, and the sudden reapplication of heat, violent exercise, uncommon exposure to the sun, an overloaded stomach, wounds, etc.; or any causes which may produce a sudden depression of action, and then reaction; or the secretions and excretions failing to carry off the superfluous heat—it must act upon the heart and lungs, giving them a quicker action. The faster the blood circulates through the lungs, the more the air acts upon it and increases the vital heat. Thus, the functions of the organs become deranged, and “disease” is produced. If sufficient oxygen does not unite with the iron of the blood to accompany and carry it entirely through the capillaries and small arteries into the small veins, the blood must fail to pass easily, and the consequence is, the filling back of the arteries, and pressure upon the valve of the aorta, producing a hard, tense, oppressed, and depressed state of the pulse.

CHAPTER V.

THE MATERIA MEDICA ; OR, REMEDIES FOR THE RESTORATION OF
HEALTHY ACTION.—ALLOPATHIC SCHOOL OF MEDICINE.

AFTER the remarks we have made, to show that “disease” is, in truth, nothing more than a change to a more or less rapid or powerful action, necessary to the harmonious development of the system, it is not expected that any means of restoring healthy action should be mentioned which has not a direct and understood effect.

The great error of believing in the materiality and specific nature of disease (at least among the most intelligent portion of the people and the schools) is, in a great measure, of modern origin,—the consequence of Dr. CULLEN’s methodical nosology, classification, and minute description of each disease, with its proper treatment. To discover the antidotes to these self-existing and independent realities was the very natural consequent, and the world is literally overrun with remedies. The drug-shelves are loaded with them, the newspapers crowded with pill and powder advertisements, the largest city buildings occupied for the manufacture, and even official pharmacy needs larger volumes for the descriptions, of these wonderful remedial agencies. The oil of soot had its day of popularity; cod-liver oil is now the great panacea for consumption and its cognate diseases. Can folly in tampering with the lives of people go further?

It is an old saying that “in a multiplicity of counselors there is wisdom;” but this multiplicity of remedies not only opens millions of premature graves for the masses, but it is itself the grave of medical science.

The homeopathic plan of treating disease is founded upon the same illusive idea of what disease is, thus literally and fully

endeavoring to carry into practice the notion that diseases are independent substantive things, for which Nature has prepared antidotes, which the practitioners of this school profess to have discovered.

It is somewhat amusing (if there can be anything amusing in so serious a subject) to trace the effects of this idea, where the sick are professionally cured, whether by a variety of remedies or by cold water. From the strong conviction that self-existing and independent "diseases" attack the human system, and fill it with unhealthful humors, the professor of hydropathy, as soon as his patient begins to recover, looks out for the crisis, that is, the escape of the disease by an eruption on the surface, or by an abscess. When he actually sees an eruption upon the surface, or an abscess, he has no longer any doubt that he has not only vanquished the foe, but has taken his camp, with all his means of warfare. Thus the poor patient is induced to believe that he had been attacked by a terrible disease, which had collected all these injurious humors in him, and which, if not discharged in this way, must have destroyed his life. The triumphant practitioner looks on with pride and self-complacency, never once suspecting that himself had been the cause of all this last suffering, local collection and discharge of matter, by using cold water, thus taking the excess of animal heat from the surface of the body, while the pulse was left hard and tense; and, of course, before the secretory and excretory vessels were prepared to carry off, by the bowels and the other emunctories of the system, the undecarbonized matters of the blood. Thus, Nature was forced to take new channels to obtain that object; whereas, if prejudice could have been laid aside, and the lancet or other proper means, (to take off the hardness and tension of the pulse, and to carry off the undecarbonized parts of the blood by secretion and excretion,) could have been used with discretion, at the same time that the cold water was taking the excess of animal heat from the blood, the system would have righted itself in its own way, in a much shorter time, and with much less danger and suffering to the patient. But we feel so much thankfulness toward the author

of the cold-water practice, for his assistance in showing that that heretofore mysterious thing called "fever," is nothing more than an accumulation of animal heat in the blood, and that that heat is under the same laws as other heat, and can be controlled in the same way, that we are disposed to look at the errors of the cold-water practice with much lenity.

We here ask our readers to reflect seriously upon the question, whether giving remedies to restore the action to its healthy state, should be founded upon a knowledge of the sciences or not. If it should not, then why lose time in the study of anatomy, chemistry, etc., as they can do no good? But if the answer should be, that it should be so founded, we would ask, Upon a knowledge of which of the sciences have *soot-oil* and *cod-liver oil* been recommended? Certainly it is not upon a knowledge of anatomy, teaching that they promote the secretions or excretions of the system, and increase or diminish the action of the lungs, heart, and arteries; or that they either relax or give tonic power to any organ. Nor do either of these remedies act by any chemical affinity, or combination. Still, they are recommended. These objections unfortunately apply but to too many articles in the dispensatories of the colleges, to increase their bulk, to distract the mind of the student, and destroy public confidence in the scientific practice of medicine. It should always be borne in mind by a practitioner that, if he can prescribe a remedy the effects of which he does not understand, others with as much right can do the same thing.

There is an objection of still more importance to the manner in which many of the most valuable remedies are treated of in these volumes of the schools, and which, while partially conveying the truth, lead the student into some fatal errors: The effects of medicines are treated of as invariable. As, for instance, *calomel* and *jalap* are always certainly purgative; *tartar emetic*, emetic; *opium* and its different preparations, anodyne, soporific, etc. These are the effects when the remedy is given while the body is healthy, or its action within a certain range, but not when the action is above or below that range. Years of suffering and thousands of lives have paid for this professional ignorance.

Disease and death are looked upon by many as agents from an angry God to punish his creatures, but if they only understood the true nature of life, and the laws of the animal economy, they could not be insensible to the beauty, harmony, and perfection of His works, and look upon the pulse as a faithful sentinel, placed at the gate of the citadel of life, to warn of the approach of every enemy, and to prepare them for every attack.

But, it may be said, "The pulse is hard to understand, and if we learn to feel our own, it will make us hypochondriacs." This is not so. The pulse, when studied properly, is not hard to understand, and instead of its study making us hypochondriacs, it is the reverse. No one ever became a hypochondriac from knowing his true situation. The means of knowing the truth is the best preventive, because it does not favor that imaginary view of organic action upon which hypochondriacism is based.

To study the pulse most beneficially, we should not only learn to distinguish the different states, as expressed by the terms "weak," "strong," "soft," "hard," "slow," "quick," "frequent," "round," "tense," "oppressed," "depressed," &c., but it will assist very much to have a scale of forces, dividing the whole range, from perfect debility to the highest grade of strength that life can bear; and to divide this into thirty parts or degrees. Begin with what may be supposed is the healthy standard,* and give ten of these parts or degrees to the descending scale from this healthy point down to death, or the extinguishment of life from debility. Then begin again at the healthy point, and give ten degrees to that deranged state of action called "fever," which raises the pulse above the healthy point to its greatest extreme, in which there is no unhealthy tension,

* This standard, (to repeat what we have stated,) may be defined as elastic, free, and distinct; not too weak, strong, soft, hard, or tense, but tense enough to show that there is a healthy contractile power in the system; not too frequent, but yet frequent enough to make about 80 pulsations in a minute, being quicker as the person is younger, and slower as he is older.

or feeling of oppression, or depression, so that it is evident that there is none of that filling back of the artery with blood upon the valve of the aorta and heart, to prevent the free passage of the blood from the left ventricle of the heart into the great artery. This will bring us to the twentieth degree of the scale. We propose to give the last ten degrees for division between the forces of pressure which act upon the valve, from the first evidence of backward pressure of the blood, in the roundness, hardness, and tension of the artery where the pulse is felt, to its greatest degree of tension, oppression, depression and irregularity, showing that the blood presses backwards upon the valve until its closing is uncertain—the effect of the blood not passing from the small arteries and capillaries into the small veins as fast as it passes from the large veins into the arteries. It is evidence of the greatest degree of inflammation, and high state of action in the heart and arteries.

Let this scale be fully understood, and it must be seen at once what grievous consequences have arisen from a belief in the individual nature of diseases, of specifics for their cure, and of wresting the lancet, in some cases of deranged action, from the hands of the practitioner. By this scale we are materially assisted in our examination of deranged action.

As soon as we learn, by a patient examination of the pulse (and no opinion should be otherwise formed), that it is in that part of the scale which indicates direct debility of action, that is, below ten degrees, we know that the system requires artificial aid from tonics or stimulants, let the debility arise from what cause it may, whether from a wound, exposure, bad air, or any other; and let the name given to this state be what it may, whether intermittent fever, typhus fever, St. Vitus's dance, king's evil, scarlet fever, or anything else. These tonic or stimulating medicines are just as sure to have the effects attributed to them in the books of medicine, as any other cause can produce a certain effect.

If we ascertain that the pulse indicates higher and stronger action than the healthy point of ten degrees of the scale, but that

there is no oppression of the circulation from the backward pressure of the blood upon the valve of the ventricle and great artery, and, of course, that the action of the pulse does not go above the twentieth degree of the scale, we know that the system is merely under the influence of exciting causes (generally an imperfect decarbonization of the blood, and an accumulation of heat), which do not stimulate it to a great extent; and that these causes can be easily removed by promoting the secretions and excretions. In this state of the pulse, all the medicines treated of as purgatives are sure to have that effect.

But when we learn from this scale, that the action of the pulse is not only stimulated above the healthy point of ten degrees, but that it is forced into an obscure state by the very causes which produce it—that is, that the action of the heart, as indicated by the pulse, is rendered apparently weak and obscure by the pressure backwards of the blood upon the valve of the ventricle and artery—we must see that danger to life, from a variety of causes, was heretofore and is now greatly increased. Heretofore, because this state of the heart, valve, and artery, could not have been understood, until the researches of the anatomist had discovered and explained the circulation of the blood in the human system; the relative position and functions of the organs; the effects of stimuli upon nervous excitability; and until the industry of the chemist had revealed the source of heat to the blood, the great excitant to action in the heart and arteries. And now, because these things are not yet perfectly understood, by practitioners of medicine or the people, this state of oppression has to be removed before purgative medicines can act properly and healthfully upon the organs of the system to promote the secretions and excretions, and remove the great exciting causes of deranged action from the system.

Experience as well as theory has abundantly proved to the author, and he has no doubt to every other person who has practised medicine extensively and watched the pulse closely, that when it indicates that this state of oppression has risen to an extreme point of the scale, say to twenty-eight degrees, as shown

by the artery being round, hard, and incompressible, with the blood seemingly determined to force its way under the finger—although when the finger presses lightly on the artery the pulse is small and indistinct—or when the pulse is in an opposite condition, and indicates extreme debility, by being very soft and weak, and the blood ceasing to pass under the finger from the slightest pressure, purgative medicines will not operate. But when these salutary laws of the animal economy are overcome by the quantity of medicine used, as is unfortunately but too often the case in the use of large quantities of calomel, the system is left without law, and death is the consequence. To exemplify these positions, let us suppose that three persons are sick, and that the pulse of the first one is ten degrees below the healthy point, and down to three or four degrees. In that of the second, the pulse is above the healthy point, but below twenty degrees. In the third, the action of the pulse is up to twenty-eight. Let us suppose that the same physician is sent for; that he is ignorant of the laws of the animal economy; and that, in consequence of his supposing that an epidemic disease is prevailing in the neighborhood, he prescribes the same remedies for all, which are ten grains of calomel and a blister. At the next visit the doctor will find his first patient worse, his pulse quicker and softer; neither has the calomel operated as a purgative, nor has the blister drawn; perhaps it has not even turned the skin red where it was applied. The doctor, concluding that there was something wrong, either in the calomel itself, or in the patient's stomach or bowels, increases the quantity of calomel, and perhaps adds some other drastic purgative medicine. He also directs that the blister be reapplied, with something added. He then visits the second patient. Here he finds that every thing goes on finely; the calomel has had a happy effect, the blister has drawn finely, and the patient is doing as well as could be expected. The doctor congratulates himself upon his success, and leaves with a pleased countenance for the residence of his third patient. Here again he finds that the calomel has failed to operate as a purgative, and the blister has not drawn well, but is extremely irritating to the patient, who is more restless.

The third day the doctor starts on his round again, and on reaching his first patient is perhaps told that the purgative commenced operating late ; that it operated violently, and the patient sunk under it ; but that the blister had no effect whatever. The second patient he finds quite relieved, and every thing goes on right. With the third patient he will find that the blister has a strong tendency to inflammation, is extremely irritating to the patient, and that the purgative medicine has acted but very little, or that it has acted violently. This patient's case will sooner or later terminate in death ; it is true, death or life may depend upon a variety of causes, but there certainly will not be a rapid recovery.

We hope our readers may now understand how the above-supposed cases of suffering and death have been entirely the consequence of the doctor's ignorance of the laws of the animal economy as indicated by the pulse. If he had stimulated the first patient until his pulse had risen to the same state as that of the second patient, or up to the secreting and excreting point, anywhere in the scale above ten degrees and below twenty, the purgative medicine would then have operated, and the blister have drawn ; and had he bled the third patient and reduced the action in his pulse down to twenty degrees, or to the secreting and excreting point, his medicine would have operated, and his blister have drawn as well as the second ; and in his case also a rapid recovery would have been the consequence.

These laws of the animal economy have never been taught in the schools of medicine ; they are unknown and unappreciated ; nor can it be otherwise until the subject of the pulse is more attended to.

Another consequence of Dr. CULLEN's nosology has been, to lead physicians and other persons to look upon diseases as fixed realities, and upon the states of the pulse as mere consequences resulting from diseases, instead of looking at the state of the pulse as the disease itself, and what are called the "symptoms of the disease," as the effects of that state.

That physician or other individual who prescribes for any

sick person without first feeling his pulse attentively, does the patient injustice, by running the risk of permitting the deranged action to go on longer, and becoming worse, than it otherwise would do, as no case of deranged action can remain stationary, but must either get better or worse. And he at the same time deprives himself of an opportunity of inquiring into the truth of, and understanding the abovementioned laws of the animal economy.

We do not intend to confine these remarks to the effects of salts, calomel, or any other medicines; they are equally applicable to all.

To illustrate our meaning, let us suppose that a physician who is unacquainted with the above laws, is standing over the couch of a patient who is half a maniac from drinking ardent spirits, or one who is over-stimulated by opium, etc., and who cannot be induced to sleep. We may imagine the anxious looks and feelings of disappointment of the doctor, after dose upon dose of laudanum, and other preparations of opium, have been given (which the books tell him are sure to induce sleep); but yet the patient will not be still and sleep, but is becoming more and more deranged. Now let us apply the simple laws of the animal economy laid down above to this case, and see what is the reason why this patient cannot sleep.

The secretions and excretions of the organs of the system cannot go on properly when the pulse is stimulated above the healthy point, and these secretions and excretions are the natural channels for carrying off the heat generated by breathing. In these cases all, or nearly all, the channels are closed, and the heat is in the system, adding, almost literally, fire to fire; thus, the unfortunate patient is said to get worse and worse, and, finally, one of two results takes place: the inherent principle "excitability" becomes so completely worn down by stimuli that action fails to take place as at first, the patient is exhausted, and from this cause falls to sleep—a rupture of some bloodvessel takes place and destroys life; or, the action in the system is not sufficient to purify the blood to resist the natural tendency of the fluids and

solids of the body to yield to the laws of putrefaction, and death closes the horrid scene. We here ask the question, although we know that we must be answered in the negative,—“Was ever a patient seen in this restless and sleepless condition, whose bowels were easily operated upon by mildly purgative medicines, and whose skin was of a soft and healthy temperature?” While in the service of the United States the writer saw many of these cases, and he can say with truth that the best way to give relief is to observe the abovementioned laws of the animal economy; by sponging the body gently with cold water until all excess of animal heat has passed off; to see that the bowels are freely open, and that the secretions and excretions go on freely. In this state of the system, opium, when given in the property quantity, cannot fail to induce sleep.

There is no part of the education of the student of medicine which is so injurious to his future success, and to his own quietness of mind, as the unbounded confidence he acquires from reading of the certain effects upon the system of the remedies he is to use when in the practice of his profession. Believing, as he does, if not wholly, at least in a great measure, in two fundamental errors of opinion, namely, in the specific nature of diseases and in the specific effects of medicines upon the system, he is daily and hourly liable to mortified feelings and disappointed hopes. The following facts are illustrative of these assertions :

The author was applied to by a gentleman to attend his wife, who, he stated, had been for some time under the care of several physicians, but without success, for a cough and pain in her side. On seeing the patient, and feeling her pulse very deliberately, the question was asked her, if she labored under the fashionable fear of being bled. To which she answered very promptly that she did not. She was bled quite largely, as her pulse was strong and hard, until it became soft and free. On her seeing the medicine prepared for her, she remarked, “Doctor, that is the very same kind of medicine I have been taking for some time past by the direction of the other doctors.” “Yes, madam,” was the reply;

"but your system was not then prepared for the proper effect ; your pulse was then too strong and hard. Your system is fit now for the reception of the medicine, and it will relieve you." It so happened, that there was a bottleful of the medicine, of which she was to take a wineglassful at a time, so that it lasted a week or more ; and the next day I was taken sick myself, and did not see my patient as such any more. The next time I saw her, about ten days afterwards, she was on her way to church. She said she was well, and has been ever since fat and hearty. The whole secret in this case was, that the patient's pulse was above the point for the organs to carry on properly their functions of secretion and excretion. To reduce that point, the free use of the lancet was required, and the use of mild purgative medicines.

We have now, we hope, made sufficiently clear the following facts :

1. That action in an organized body is life.
2. That that action is the result of stimuli acting upon an inherent principle in the organs termed " excitability."
3. That all heat in the body is produced by breathing, and that that heat is the stimulant to all the actions and motions of the organs of the system.
4. That the blood is decarbonized by breathing atmospheric air in the lungs, and has to be decarbonized to a certain point ; and a certain amount of animal heat has to be retained in it, to produce healthy action in all the organs of the system.
5. That, in consequences of the changes to which atmospheric air is liable from various causes, the proper decarbonization of the blood does not always take place ; and, consequently, the secretions and excretions from the blood are checked ; that this imperfect decarbonization of the blood therefore becomes the remote cause of diseased action ; and that whenever any exciting cause to increased action in the system takes place, increased animal heat in the blood is the consequence, and this again acting upon the heart and lungs produces its own rapid accumulation, which acting upon the blood in its undecarbonized state, becomes the immediate or exciting cause of what is called fever or disease.

6. That the increased action thus produced (combined with the fact stated by LIEBIG, that the oxygen of the air which unites with the iron of the blood may be so small in quantity as to be exhausted before the blood passes through the capillaries and small arteries and into the small veins) frequently runs so high as to prevent the free and easy passage of the blood through the capillaries and small arteries and into the small veins, which causes a backward pressure of the blood in the artery upon the valve of the ventricle and great artery, and produces the states of the pulse expressed by the terms "hard," "tense," "oppressed," "depressed," and "irregular;" and causes the most dangerous states of deranged action or disease; that while this state of the circulation (as indicated by the pulse) lasts, all the secretions and excretions are deranged from their healthy state; that all or some may be suppressed, while others may be forced into excess; that there is great danger of some of the blood-vessels being ruptured and hemorrhage coming on; that when it does it cannot be stopped, until the loss of blood has relieved the arteries and valve from the backward pressure of the blood; and that, if, by the excessive use of purgative medicines, the secretions and excretions from the bowels are induced, they will go on not only until this backward pressure is removed, but probably until great weakness is produced.

7. That there is a dependence of the different organs of the system upon each other, and particularly of the lungs upon the liver, to assist in decarbonizing the blood; and that, by this wise arrangement, the quantity of carbon consumed in the system, and the quantity of heat given off to the blood, is regulated, thus enabling the human family to inhabit the earth, from the equator to the poles.

The proper study of this dependence of the laws which govern mankind, and of the changeable state of atmospheric air, must show us why bilious affections are so much mixed up with all the other derangements of the system, and why calomel is so often necessary in the practice of medicine—not that this medicine (as is ignorantly supposed by many) reaches the liver, and

acts upon it more than any other, but because it has the effect of depressing the power of the stomach, and muscular action, more and longer than any other of its class, thereby lessening the number of respirations in a given time, and, of course, the quantity of heat given out, the great stimulant to action of the heart and arteries. Calomel, therefore, can depress the pulse to the point for secretion and excretion, better than any other medicine of its class. Hence its extensive utility in fevers, as the pulse is generally above the healthy point at the commencement of bilious affections.

Just the reverse of this is the effect of quinine (the active principle in Peruvian bark) upon the stomach and muscular fibre of the system. It increases their power of action, and this increased power lasts longer than from any other medicine of its class. The action of the lungs is accelerated, the blood more perfectly decarbonized, and more heat given to it. When the pulse is below the healthy point, this medicine is generally found most serviceable in restoring it.

These remedies, or any others, are not accidental in removing a pain in one patient, an eruption in another, or the absorption of water or other matters in another, nor are their effects governed by the name which has been given to what is called the "disease;" but they are founded upon the immutable laws of a Good and Wise Creator. When calomel is given to a patient whose pulse is already too low, that is, below the healthy standard; or when quinine is administered to one whose pulse is above it, almost incalculable injury is done. Hence the benefit to the practitioner of the scapegoat "disease," with its malignity, virulence, &c. What is called the "malignity" or "virulence of disease," is always in proportion to the failure of the blood to be decarbonized to the proper standard, and to the quantity of heat retained above 98° ; both tend to destroy the good effects of life, viz.: to prevent the solids and fluids yielding to the laws of fermentation and decay. Or, on the other hand, if there is a failure of the air to decarbonize the blood so as to prevent the generation of a sufficient quantity of heat, life must

become extinct from a deficiency of stimulus to move the heart, etc., etc.

We shall now treat more particularly of the individual states of deranged action to which the human system is liable; and of the remedies which are best calculated to relieve them. No consideration could induce us to do so but a desire to relieve our fellow-creatures from sickness, and premature death. Nor would this disposition induce us to venture, had we not many years' experience of the truth of what we have said, and shall hereafter say.

If the study of "diseases" were a new one, and we could take an unbiased view of them; if we knew that millions of human beings are living without clothing in the coldest climates; and that they are not liable to so many forms of fatal disease as we are, we should at once conclude that cold certainly is not, but probably excess of clothing is, the cause of those diseases. But, so prejudiced are our minds, from education and habits of thought, and so strong our hopes and fears, that, although we cannot shut out from our minds a knowledge of the fact, that "diseases" are daily becoming more common and fatal among us, we still cling to the hope of the discovery of some sovereign panacea, and become the dupe of every one who may propose to defraud us of both money and life.

When "yellow-fever" ravaged the cities on the Atlantic coast, if the people had trusted alone to the skill of physicians, this scourge would be as prevalent now as then; but by sanitary municipal laws, resulting from popular inquiry as to the nature and cause of yellow-fever, it now seldom appears, and, where it does, greatly modified. But "consumption," "bronchitis," etc., have been left to the doctor, the people never having attempted to find out their true cause, accepting the theory of the schools of medicine, which suppose that they are either hereditary, or attributable to that nondescript, intangible, unscientific thing called "a bad cold deeply seated." There are certainly means of prevention for the latter as there were for the former. Bilious fevers we have shown to be depend-

ent upon an imperfectly decarbonized state of the blood, and excessive action in the system by too much heat. We have no doubt that consumption, bronchitis, etc., are thus produced, only differing in degree; and that, as soon as the prejudices of education lose their influence over the mind, these diseases will be as rare as yellow-fever in a clean and well-paved city.

These derangements of action can only be removed by causing the blood to be decarbonized to the healthy standard, and by bringing its temperature to 98° , let the means of doing so be what they may. The best practice of the healing art, then, consists in the use of such means as are quickest, safest, and most certain in their effects; the easiest procured, the easiest of application, and which cost the least in trouble, time, or money.

We have before stated that healthy action in the organs of the system produces the most perfect digestion, assimilation, secretion, absorption, and excretion, of the matters taken into the stomach for the nourishment of the body; and that this action always goes on properly (when the stomach is not overloaded, or the food poisonous), so long as the blood is at the proper temperature, is properly decarbonized, and the functions of the heart and arteries undisturbed; and that at the same time the bloodvessels are minus, or in want of a supply, as indicated by the feeling of hunger.

There is, perhaps, no function of the organs of the body so little understood as that of digestion and assimilation. The generally received opinion is, that it depends upon an independent action of the stomach by its gastric juice, etc., and if it does not go on properly the stomach is itself in fault, or out of order. As soon as digestion fails to go on, from any cause whatever, the doctor is sent for, and the poor stomach is doomed to receive all sorts of nostrums and panaceas, which can be made into pills, powders, drops, etc. These having failed, it is at last made to swallow some of the stomach of a codfish to invigorate the lost powers. This is the climax of ignorance and credulity.

In truth, digestion and assimilation are effects produced upon

food, not by the stomach, but in the stomach and bowels, by the gastric juice, which is a secretion from several organs; and the secretion of this fluid in its perfection is evidence of the wants of the system, and that it is ready to receive a supply of nourishment. But, to produce this state of readiness, there must be some previous exhaustion. The mind must not be too much acted upon by the sensations of pleasure, distress, hope, or fear; nor must the action going on in the other organs be too much excited or depressed. If the temperature of the blood is raised too high, the bloodvessels immediately become plus, a different action and supply come on, and all food is rejected; or it goes into the state of fermentation, and finally putrefaction.

We say, that to produce this readiness in the bloodvessels to receive nourishment, there must have been some previous exhaustion of them. In the child, this exhaustion is always going on to perfect its growth. In the adult, it takes place from waste produced by labor, exercise, etc. With those who have been previously reduced in flesh by sickness, etc., it takes place to supply the previous waste; and in persons going into the state of excessive fatness, from a slight increase of the temperature of their blood, by the use of flannels. It takes place also from the discharges produced by issues, sores, etc. Hence, the great appetite and strong digestive powers of all persons in these several situations.

From a knowledge of these laws we must at once see the vast importance of clothing to the health of the body; to its benefit when in due proportion, and to its great injury when in excess, particularly such clothing as obstruct in a great degree the passage of heat, such as silk and flannels next the skin.

Clothing, when properly managed, keeps the pores of the skin clean and open, and its surface soft; so that perspiration flows easily, and carries off all excess of heat, while, at the same time, sudden and extreme changes are prevented, which, when the blood is not properly decarbonized, serve to destroy that regularity of action in the organs of the system upon which health depends; by this proper use of clothing, man is enabled to with-

stand the influence of all climates, and still be an active and efficient being.

But if clothing is so managed that the wearer is afraid to throw it off, or change it, when it serves to retain too much animal heat in the blood, or to keep the skin too much relaxed by its carrying off too much of the fluids of the body by perspiration, and not permitting the animal heat to escape from the blood by exhalation, it often becomes a greater enemy than friend to the health of the body, and is in all instances the real cause of the derangements to which the system is subjected.

We here mention a few cases of deranged action, which too much clothing has, in one or the other of the above ways, been the principal cause of producing.

If a person, whose blood is not properly decarbonized, and retains rather too much heat from the use of flannel, but not sufficient to produce immediate sickness, eats a quantity of oysters, milk, or other diet, which requires to be digested in a short time, and retires to bed covered with blankets and coverlets, thinking to enjoy a good night's sleep, he is very apt to be disappointed. The undecarbonized and over-warmed blood being now acted upon by the heat retained in contact with the body by the non-conducting blankets, and perspiration being prevented by the undecarbonized state of the blood, that heat remains, and now stimulates the heart and lungs into quicker action, and more rapid generation of heat. The heat now raises the temperature of the contents of the stomach above the digesting point, and fermentation commences in it. The products of this fermentation act upon the stomach and bowels, as causes of great irritation, and produces motions in them for its expulsion. Now, if the individual is an adult, a case of what is called cholera morbus may commence; or, if a child, it may be a case of "scarlet" fever, etc.

There are always two causes of danger to life from wounds: the first depends upon the importance of the organ wounded, and upon the extent of the wound; the second, upon the reaction, or what is termed the "symptomatic fever." With the first

of these causes of danger we have nothing to do here, as it comes wholly within the province of the surgeon. But we must be allowed simply to remark that, in the surgical department of the healing art, scientific research has done much to relieve mankind. From the second cause of danger they are perhaps worse off than they were fifty years ago, simply because the luxuries of life, which are inimical to life during the continuance of a wound, are greatly increased, and more attainable than they were at that time, while there has not been a corresponding increase of medical knowledge to guard against their injurious effects. The idea of "the fever, its powers, and will," still cling around the mind of the physician, and prevent his looking for the true cause.

Let any person, whose blood is imperfectly decarbonized and over-hot from wearing flannel, or other non-conductors of heat, next the skin, receive a wound, whether the scratch of a pin, a cut from an ax, a lacerated wound from a pistol-shot, or cannon-ball, or a bruised wound from a piece of wood, it matters not; and then let him be exposed for a short time to cold, and finally taken into a warm room and placed in bed under an unusual quantity of blankets: we promise a desperate case. We have witnessed but too many such cases, brought on by just such causes.

Or, let a person whose blood is in this state of imperfect decarbonization be exposed to great changes of temperature, and then "catarrh," or "bad cold," is induced, and if this "bad cold" is attended by a hard, tense pulse, and some degree of inflammation about the trachea, bronchea, or lungs, it will be called "a deep-seated cold," which, if it continues until ulceration takes place in either of those organs, will then be "bronchitis," or "consumption."

Flannels worn next the skin are always becoming, by animal heat, thicker and more impassable; those who use them are therefore not aware of what they are compelling their systems to bear. Surely, it seems to us, if the people only knew enough of the laws which govern life and healthy action in their system to

understand that all the heat in their bodies is derived from breathing, and that if more of it is retained in their blood than just enough to raise the mercury to 98° , disease and perhaps death is the inevitable consequence, they could not wear flannel without great caution.

But, from the effects of defective education among the people, and the continuance of the practice among medical men of always advising their patients to be cautious, to be sure to keep themselves warm, and particularly to wear flannel, it is now almost universally worn, under the belief that it is essential to health, and that, if it does no good, it will certainly do no harm. In truth, if a picture could be drawn of the "diseases" and suffering to which the system is subjected by this single practice, it would be appalling. The author has witnessed many of these effects in different forms, and has had the pleasure of relieving many persons of them by the use of the most simple means; such as taking the flannel off, bathing the body and limbs in cold water until the heat is reduced to the proper standard, and then, if necessary, using such mild purgative medicines as will promote the secretions and excretions.

To the unprejudiced mind of every one who will examine the subject attentively, the success of the cold-water practice, as introduced by PRIESSNITZ, unaided as it was by any other remedy, should be conclusive proof, that at least those "diseases" which had been "cured" by it were the effects of too much heat in the system. This cure was nothing more than the action in the different organs becoming right as soon as the excess of heat was removed.

As men advance in age they become more and more determined in their purposes and objects of life, and are less and less disposed to make changes in their habits, while, at the same time, their minds are more and more employed in business occupations. The more energetic their minds are, the more the health of their bodies are lost sight of in the turmoils of life. It is easy to account for so many, particularly those who are engaged in public business, sinking into the grave in comparatively early life.

The increased heat of the blood by excitement and flannel-wearing, forces on the current of life faster than the whole organization can bear, until the most delicate organ at last gives way, whether it be the brain, the lungs, the bowels, etc., (for there are but few persons in whom all the organs are of the same strength,) and life is brought to a close by "apoplexy," "consumption," "diarrhea," etc. The causes why the deranged actions, "consumption" and "diarrhea" are not brought back to the healthy state (in "apoplexy" there is generally a rupture of the bloodvessels as well as deranged action) is, because the true causes of derangement are not understood or even suspected. As Nature, in her efforts to give relief to the system by carrying off the excess of animal heat, can only work by the means a beneficent Providence has given her (viz.: by exhalation and evaporation from the surface of the body, which the impervious flannel now denies, and by secretion and excretion, neither of which can carry off the flannel,) she has to do the best she can, until, inadequate to restore a system thus immeasurably burdened, it becomes exhausted, and death closes the scene. The suffering patient, the doctor, and the people look upon these efforts of Nature as diseases, which, in the language of the day, can be "cured" by some specific only, or system of remedies.

Again, this hot and imperfectly decarbonized state of the blood, when acted upon by flannel and other non-conductors, has the effect on some constitutions of so relaxing the skin and other surfaces of the body, and even of the whole muscular fibre, that the womb, rectum, and other dependent organs of the body become involved, and many painful ailments result. Nor does the evil stop with relaxation in the skin and muscular fibre. For so much of the fluid part of the blood, with some even of its saline matters, is carried off by the skin, that the kidneys have but little urine to pass into the bladder, and the proportions of the alkaline, earthy, and acid matters being thus disturbed, and these matters themselves dissolved in so much less fluid than Nature intended when the urine passed from the kidneys to the bladder, new combinations take place, and insoluble salts formed,

constituting another class of disease known as "calculus," or "stone" in the bladder or kidneys.

So general is the improper use of flannels and other non-conductors of heat, that it may be truthfully asserted that at least one-twentieth part of the whole adult, native-born population of the United States are suffering under its effects in one way or the other; and that at least one-tenth of all the children born in the United States die from the same cause, while medical doctors of every description are ever at work with their remedies in the form of pills, powders, drops, etc., to arrest, under the name of "diseases," the effects of violated law.

It is somewhat amusing, while at the same time it excites pity and sympathy, to hear ladies, whose skin is thus relaxed, and whose muscular system is worn down to such weakness that they are subject to one or more of the above-named "diseases," (and who perhaps have travelled and fatigued themselves greatly to consult with eminent members of the medical faculty to discover the causes of their sufferings, and the sovereign panacea,) exclaim, as they frequently do,—“Oh, how I love sea-bathing! it makes me feel so much better for a little while!” Never did any person who was in the state of fever undress himself and get into a cool bed, who did not feel, as the lady from the bath, “much better for a little while.” But, from education and habit, the use of non-conductors of heat are again resumed, and both patients return to their former state, perhaps a little worsted, and attributing the change to the cold.

Here, as in thousands of instances, the truth, as it were, stares us in the face, but it comes in such a simple way, is so plain in its appearance, and, more than all, is so different from what we have been taught to believe and expect. “What!” we are disposed to ask ourselves, when we feel this relief, either from the cold bath, or simply from exposure to cold, “am I to believe that, by simply taking this flannel off (which I have heretofore been told to look to as my surety for health), and cooling myself, either by the cold bath, or by simple exposure to cold, I am to be made well?” and then to answer our own inquiry by thinking that it is

too simple to produce such an effect, without allowing ourselves to perceive that if flannel, by keeping the body warm, can be a powerful agent in supporting health in us when it is right, it will be equally as powerful an agent to destroy health in us when it is wrong.

It is not intended to condemn, in all cases, the use of flannel and other similar clothing, for we are well aware that there are some constitutions which do not generate heat fast enough under all circumstances for the healthy development of the system; and that assistance in retaining the animal heat by flannels, or other non-conducting agents, is indispensably necessary. But they are not necessary in one half the cases in which they are used; and, where not necessary, they greatly injure the system. It would be well for those whose bodies are in a deranged state of action to suspect the flannels they wear.

When the effects of flannels next the skin are salutary, they cannot be mistaken, for they make the wearer feel stronger, lighter, and more active; but when feelings just the reverse of these follow their use, they should at once be thrown off.

We have now brought forward sufficient evidence to prove that defective decarbonization of the blood by breathing is the remote cause, and that an excess or deficiency of animal heat in the blood is the proximate or exciting cause of all the deranged actions or "diseases" which take place in the human system: that these causes, acting upon the organization of the system, while it is in different states of excitability, and in different proportions to each other, produce all the different kinds and grades of derangement; and that each of these causes may be increased, or partially if not wholly prevented, by human agency, before deranged action takes place.

We proceed to show how the different states of deranged action are to be brought back to the healthy state, or "cured." But, before we do so, we shall remark upon the difference in the practice of the healing art as conducted by the members of the Allopathic School, and by PRIESSNITZ and his followers, and make a comparison of the objects had in view and the effects of their practice.

It is really curious to notice the variety of practice pursued by different schools and professors of the healing art, while all profess to found their claims to truth and confidence upon successful experience, and are led by the same false views of the nature of diseases. Both the members of the allopathic school and PRIESSNITZ and his followers believe in individual substantive somethings which have to be driven out of the body by antidotal remedies. Consequently the members of each resort to their favorite remedies to accomplish that end.

The members of the allopathic school attempt to "cure" what they call "fever" almost invariably by exciting the secretions and excretions; hence the general use of calomel to carry off the bile, or, in truth, to decarbonize the blood, and thereby remove the remote cause of the deranged action. PRIESSNITZ and his followers turn their attention exclusively to the abstraction of animal heat whose excess is the proximate or exciting cause.

Now, as before remarked, the action in the system is always tending, by the laws of a good and wise Creator, to the healthy state. Both of these kinds of practice, therefore, will succeed very well generally, as experience has shown, where the "disease" has not been excited much beyond the healthy standard, say 19.20° or 21° of the scale.

We learn, then, that if we assist the decarbonization of the blood by promoting the formation of bile, and its secretion and excretion by the use of calomel, the excess of animal heat in the blood (the proximate or exciting cause of disease) will generally pass off with those secretions and excretions. If all the extra-animal heat of the blood is carried off by the use of cold water, the system will generally either secrete bile by the liver and thereby decarbonize the blood, or it will be decarbonized by the lungs, and thus remove the remote cause of deranged action, and suffer healthy action to be restored. These are the effects of the two kinds of practice, when the deranged action and its causes do not go to extremes; when they do, then it is highly instructive to notice the injurious consequences to the patients of both, from not

having both of these causes of deranged action removed at the same time.

If the practitioners of the allopathic school do not use cold water, or some other means of taking out the excess of heat in the blood, their purgative medicines will not operate as effectually in decarbonizing the blood, or, in the language of the day, in "carrying off the bile." At the same time, the solids and fluids are constantly liable to yield to the laws of fermentation and putrefaction, and of course to death, from this animal heat called "fever."

On the other hand, the hydropathic practitioners, ignorant of the effects which breathing should have upon the blood, and believing in the substantive nature of diseases, think that every eruption, every abscess, and every stain they see on their bandages or bedclothes, are but the retreating footsteps of vanquished "diseases," which they call "crises." Whereas, these are the signs of the important fact that, while the heat of the blood has been kept down to the healthy point by cold water, the practitioner has failed to encourage the secretory and excretory organs to carry off the excess of carbonaceous matter from the blood; the remote cause of the fever. These eruptions, abscesses, stains, &c., are the effects of that defective decarbonization which should have been carried off by the natural emunctories of the system.

Where the action in the bloodvessels does not rise higher than 20° of the scale; where there is no obstruction to the free passage of the blood through the small arteries and capillaries into the small veins; and of course no backward pressure of the blood, however great the heat of the blood may be, and how much soever the heart may be excited to violent action, as indicated by a large, free, and compressible pulse, there is but little danger to the life of the patient (unfortunately, physicians sometimes bleed upon this state of the pulse, and their patients faint and are otherwise injured by it), because this heat is easily carried off, both by the secretions and excretions, and the applications of cold water to the surface of the body.

Mild purgative medicines will serve to decarbonize the blood, by carrying the bile off. But, in proportion as inflammatory action in the bloodvessels rises higher than 20° of the scale—in proportion as the free passage of the blood is obstructed, and the blood in the great artery, the aorta, is thereby pressed backward upon the valve of the ventricle more and more—so does the power of mild purgative medicines become less able to effect the object in view.

Here we discover the reason why calomel is supposed to act directly upon the liver, and thereby produce the secretion of bile, although such an opinion is in direct opposition to the teaching of anatomy; and why it is said to be the Samson of the *materia medica*. Calomel, when taken into the stomach, serves, from its effects upon that organ, to depress the action of the heart and arteries more, and for a longer time, than any other purgative medicine known, and thereby serves more than any other to relieve the obstruction of the blood, acting also as a purgative.

From this explanation, it is evident that calomel should never be given, unless the action of the heart and arteries is above the healthy standard; else, it will depress the action in the system below that point. To obviate this, physicians who believe in the direct effect of calomel upon the liver, and its power to make that organ secrete bile, give it to their patients, combined with opium or other stimulants, thus harassing their systems both ways, which causes more sickness and suffering than can well be conceived of.

If a practitioner of medicine doubts the sedative effects of calomel upon the heart and arteries, let him use a small quantity of tartar emetic (which no one will deny is a sedative), combined with salts, or let him bleed, and then give salts, to some patients, where he otherwise would have given calomel, and he will find that these different remedies will have about the same effects. We mention these effects of different remedies, to show that calomel is anti-bilious by its effects upon the heart and

arteries, and not by any particular power it has to act directly upon the liver. Calomel being found to possess the power of depressing the heart and arteries in their action, as indicated by the pulse, and its good effects as an anti-bilious remedy depending upon that power, it can be at once understood why it has become so popular in bilious fevers; as in ninety-nine out of a hundred cases, the action of the heart and arteries, as indicated by the pulse, is above the healthy standard.

If we admit that calomel, in these depressing qualities, is equal to 30° of the scale, and that 23° is represented by a full and strong pulse, then it is equal of itself, without the use of still more depressing remedies, to remove all cases of deranged action up to a full and strong pulse, but no further.

All deranged action, then, which goes higher than 23° of the scale, and which are represented by hard, tense, oppressed and depressed states of the pulse, require still stronger means to bring them down to the healthy standard than calomel alone, or calomel united with any other purgative medicine; to do this, the lancet, in the hands of the practitioner of medicine, is the only sure remedy. He who fails to use it when the pulse demands it, fails to do justice to his patient.

Remedies are said to "cure diseases." So we suppose that where bleeding is used successfully, it can be said to cure the disease. Thousands have undergone it without inquiring any further into its effects upon the body or its action.

The habit of writers and lecturers on diseases has been to state that such and such diseases produce, or are accompanied by, such and such states of the pulse. Pleurisy, it is said, has such a state of the pulse; rheumatism, such a state of the pulse; typhus fever, such a state of the pulse, etc. They claim for these diseases certain critical days, days for expectoration, days for sweating, and other evacuations, days of duration, etc., which, in their estimation, should all, more or less, govern the use of the lancet.

Now, let us look a little into the effects these views of the medical faculty have had, both upon themselves and the people.

It must be obvious that bleeding, in reality, can have but one effect upon the body, that of reducing the quantity of blood. If, then, the quantity of blood already in it is too little, bleeding must have a most pernicious effect. If the quantity is somewhat too much, bleeding has a good effect, which is immediately perceived and appreciated. But if the quantity is greatly too much, the effect of withdrawing a small quantity can scarcely be perceived, nor can the good effects of bleeding be fully perceived, until the quantity taken is such as to relieve the overburdened heart. Take a rather rough comparison, but yet a true one: An elephant is a powerful animal, but he may be so much overloaded, that his utmost exertions will seem but weak and inefficient. If a little of his load is taken off at a time, and he is made to use the whole of his power to carry what is left, his strength will be so worn down, that at last he will not only be unable to carry what should have been a proper load at first, but he will not be able to carry any load at all. Here every one will say, "O, that is plain; the load should have been lessened at first to the proper quantity." So it is very often with the human heart, from the sudden stoppage of perspiration, the secretions, excretions, and an accumulation of heat; it is overloaded, like the elephant. But, unfortunately, the true principles upon which bleeding should be employed have never been generally taught, and the consequences are, that the popularity of this remedy, like ladies' dresses, changes with the times. At the present day, many physicians will not bleed at all, and patients submit to the use of the lancet with fear and trembling.

That state of deranged action called "pleurisy," and all other inflammatory "diseases," may, and often do, commence with a tense and depressed state of the pulse, indicating a difficulty in the passage of the blood through the small arteries and capillaries, and into the commencement of the veins, thereby causing an over-fulness of the larger arteries, and a consequent backward pressure of the blood in the aorta upon the valve of the aorta and ventricle of the heart, making the contractile force of

the ventricle less perceptible in the pulse. The loss of half a gallon of blood, or more, may be required before this pulse can be relieved, and brought to the healthy state. This is either an oppressed, or a depressed, state of the pulse, depending upon the extent of the difficulty in the circulation, and the length of time it has lasted. Or inflammatory affections may commence with only a strong and full pulse, which will require the loss of only a pint or two of blood to set the action in the system right.

In truth, the coming on of expectoration, sweating, and other critical evacuations (as they are called), in these diseases, depend upon the state of the pulse. They will surely come on so soon as the pulse is brought, or nearly, to the healthy standard, whether that is done by bleeding, or by other evacuations. So also with the complete removal of the deranged action; it will take place as soon as the pulse is brought to the healthy degree, and the blood purified to the proper standard of decarbonization.

But it is sometimes the case that the excess of animal heat in the blood is removed, and apparently healthy action established in the blood-vessels without the proper purification of the blood, and relapses ensue; hence some who are relieved by bleeding alone, or by sweating remedies, without the use of antibilious remedies, are often liable to returns of deranged action.

It must appear evident to every intelligent and unbiased mind, that it is perfectly impossible for any person to form a correct and decided opinion on the propriety or impropriety of taking blood from the human system at any time during the continuance of deranged action, by the indications and signs heretofore laid down by writers and lecturers; such as, the name of the disease, the length of time it has continued, the severity of the pain felt, critical days, the state of the secretions and excretions, etc. To do so with confidence, one must make himself well acquainted with the organs through which the blood flows in its round of the circulation, the nature and effects of breathing. He must understand that the blood is the great

stimulant to action in the heart and blood-vessels ; that the blood can become over-heated, and imperfectly decarbonized by breathing ; that it can become too stimulating, and not stimulating enough ; that it can become too thick, and not thick enough ; and that there can be too much of it in the blood-vessels from deficient secretion and excretion ("plethora"), as well as too little, from excessive secretions and excretions carrying it off too fast. The reiterated law of the animal economy must ever be remembered, that a part of the oxygen of the air breathed into the lungs unites with the iron of the blood, gives to it its bright color, enabling us to distinguish between arterial and venous blood, and gives to it also that stimulating quality which enables it to pass the critical point with ease in its circulation, where the forcing power of the ventricle of the heart, and the contractile power of the arteries, ceases in the termination of the arteries and capillaries, and where the suction or drawing power of the auricles commences.

Having gained a knowledge of these facts, and determined from observation and experience what constitutes a healthy state of the pulse, as to number, force, frequency, and particularly as to the quantity of pressure required to prevent the blood passing under the finger (the most necessary knowledge perhaps of all), we are not only prepared to understand the terms used by writers to express the different states of the pulse in certain "diseases," such as strong, weak, soft, hard, quick, slow, round, tense, oppressed, and depressed, but to judge correctly, and, almost immediately after placing our fingers on the artery, to say what is the difficulty under which the system labors.

If, for instance, the pulse is strong, with the artery large, full, and soft, and the always accompanying hot skin,* we know that accumulated heat in the blood is the great cause of deranged

* This pulse causes some practitioners to bleed their patients (particularly if they complain of much pain in the head), thus inducing faintness and a long period of sickness.

action, and that if it is promptly removed by the mildest and surest means, such as sponging the body freely with cold water, and using mild purgative medicines, the system will soon restore itself to healthy action. If the pulse is frequent and weak, the artery soft, and thus too much heat in the system, it should be extracted by the same external means, and the usual debility in the system is then easily removed by the use of tonic medicines. We use the term "tonic," as it is used in the allopathic schools, to express the effects of a large class of remedies, although we are satisfied that these effects are more easily definable, and better understood by some other term.

This word "tonic" (giving tone) was applied at a time when all opinions formed on the influences and reasons for the use of this class of remedies were mere conjectures. When, therefore, these writers wished to define the effects of remedies which rapidly gave a transitory strength to the system, they employed the term "stimulants," and the term "tonics" when treating of remedies which slowly gave an enduring strength. From ignorance of the effects upon the blood of breathing, they could only suppose that these remedies operated upon the health through the medium of the nerves. But how these effects could continue after the remedy was no longer given was a question which they could not answer. Hence the indefinite idea that, after the proper *tone* was given to the organs of the system, they could then go on properly, had to satisfy the minds of both practitioner and patient; it has satisfied them up to the present day, as no further inquiry has been made.

But, fortunately for the people, the question, as to how the strength of the system remains after the remedy ceases to be given, can now be satisfactorily explained and easily understood by all. We have all along reiterated that defective decarbonization of the blood, and imperfect oxydation of its iron, by the atmospheric air which enters the lungs, are the remote causes of debility, and all states of deranged action. When these facts are properly understood there will no longer be any doubt as to the influence of tonic medicines. Any remedy which enables

the chest to expand more freely and frequently, and thereby brings the blood into contact with more of the oxygen of the air in a given time, will certainly act as a tonic when the system is in a state of debility. This is remarkably the case with the sulphate of quinine, and at the same time it relaxes the skin, and disposes the heat of the body to pass off more freely.

If the pulse is strong, and the blood forces itself along the artery in defiance of a moderate degree of pressure upon the artery by the finger of the observer, and the whole quantity of blood which belongs to each wave or jet, moves forward so that the artery is entirely emptied between each, as is indicated to the observer by each wave or jet being entirely free of the one which precedes and that which follows it, it shows that the heart and arteries are stimulated to a high degree of action, but that there is no failure of the blood to pass freely and easily through the small arteries and capillaries into the veins. So long as this is the case, there is no danger to the life of the patient, unless by mal-practice, whatever may be the name given to the "disease" caused by this state of the pulse, whether "bilious fever," "pleurisy," "smallpox," "measles," or anything else; or which is the particular organ affected, whether one of the vital organs, or the eye, the tooth, the skin, or foot. This increased action in the organs of the system is sure to subside; and the local arrangement is sure to come right again, as far as the extent of the injury done, and the nature of the organ affected will allow, if the heat of the blood above the healthy degree (which is the great exciting cause of it) is carried off. This may be done, with more or less certainty of success, in several different ways.

1st. By sweating remedies, such as warm bathing, warm drinks, stimulating remedies taken into the stomach, etc. If they produce free and copious perspiration they carry off the excess of heat, the cause of the excited action, and the "disease" is relieved. This they will surely do, if they do not excite the action of the heart, and consequently the velocity of the blood so much as to prevent its free and easy passage through the small arteries and capillaries into the veins, which will depend upon the state of

decarbonization or purity of the blood. But if, from the imperfectly decarbonized state of the blood, these remedies do fail to produce free perspiration, they will certainly make the deranged action worse, both by increasing the quantity of heat (the cause of the disease), and the action of the heart and arteries (the disease itself). The experience of those who have tried these remedies proves the certainty of these results.

2d. By emetics and purgatives, which excite the secretions and excretions of the stomach and bowels, and in this way carry off the heat of the blood, while, at the same time, they assist in decarbonizing it by promoting the secretion of bile by the liver. These remedies, when the pulse is in a proper state, being certain in their action, is the reason of their general popularity.

3d. Let those whose pulse is as above described go to bed as soon as possible, and into a state of rest; in doing so, they divest themselves of much of their clothing, and the number of their respirations is greatly diminished. The quantity of heat generated is lessened, and passes off much more rapidly. Here we may confidently ask,—“Who has ever had a fever and has not felt the relief given by these simple remedies?” No one, we are sure. These “simple remedies” always begin the cure of the fever right; but, unfortunately for the sick, they have neither been understood nor followed by the learned doctors. To the effects of these “simple remedies” the homœopathic practitioner owes more of his success than he is willing to own; and the cold baths of PRIESSNITZ are but carrying their indications to greater extremes.

4th. By bleeding. This remedy directly lessens the quantity of blood which passes through the heart and bloodvessels, and that which passes through the lungs at each inspiration and expiration. It therefore lessens the quantity of blood exposed to the air in the lungs, and the heat generated in a given time. It also relaxes the skin and disposes the heat of the body to pass off more freely.

Here we have, as it were, a bird's-eye view of all the classes and effects of remedies, used by practitioners of every school, to

cure "fever," or such deranged action in the system as is indicated by the states of the pulse above described; namely, stimulants, emetics, purges, the application of cold, or the abstraction of heat, bleeding, and tonics. With what are called specifics, or remedies which are said to cure diseases without producing any known effect upon the system, we have nothing to do, as we look upon their use by practitioners as barefaced impositions upon the credulity of their patients.

If any person can see or understand any other curative effects, from the classes of remedies mentioned above, than those of carrying off the excess of animal heat, and of decarbonizing the blood by promoting the secretion of bile, where the action in the system is too strong for its healthy development, and of adding more oxygen to the iron of the blood, by increasing the action of the lungs, where the action in the system is too weak for the healthy development of its organs, we should like to hear them described.

It is true there are such remedies as narcotics and astringents. These can only suspend momentarily the effects of the deranging causes; the power of even doing this depends upon the state of organic action.

We come now to those deranged states of action in the system where the pulse rises above 20° of the scale, and in which the blood fails to pass easily through the small arteries and capillaries into the small veins, and causes that backward pressure of the blood in the arteries which produces their hardness, tension or tightness; and finally affects the valves of the heart, particularly the one which prevents the return of the blood, and thereby causes those states of the pulse expressed by the terms, "round," "hard," "tense," "oppressed," "depressed," "intermitting," "trembling," and "indistinct," all of which are but the effects of the same cause, as must appear evident to every person who has a slight knowledge of the organs of circulation; or, in fact, a knowledge of any contrivance for forcing fluids through elastic tubes guarded by valves, and who will give the subject the least reflection. As soon as the blood which is in the larger arteries

fails to pass through the small arteries and capillaries into the small veins as fast as it passes through the valve of the ventricle and artery into the aorta, so soon will the artery, where the pulse is felt, begin to give to the finger of the observer the sensation of roundness, then hardness, tension, tightness, etc., etc.—As soon as the same cause goes on until the backward pressure of the blood in the artery affects the full play of the valve, the effect will show itself by rendering the pulse less and less distinct and free, until, when the pressure becomes equal on both sides of the valve, the pulse will cease to be felt at all, as the valve will now remain open, and in a great degree stationary, thus carrying the pulse through the grades of oppressed, depressed, intermitting, trembling, and indistinct.

The author is aware that he has here ventured upon a novel explanation of the causes of these states of the pulse, no other ever having been given but that which supposes that they are incidental to and caused by certain “diseases,” a supposition which, the author believes, has caused more suffering and death than any other error ever made by medical teaching, and the legitimate result of the nosology and the classification system.

What is called “disease” in the human system must be looked upon as an effect of remote and exciting causes, and not as the cause itself. For the perfect development of the organs of the system, a certain quantity or force of action must be kept up, to do which the blood must be kept at a certain degree of purity and temperature. Whenever either of these is changed from any cause, the quantity or force of action in the organs must also change. This change in the force, or quantity of action, is “disease.” What are called symptoms of diseases are but the effects upon the organs of these changes in the force or quantity of that action.

The heart of warm-blooded animals, it will be remembered, is in truth four combined pumps; the two auricles of the heart and the veins of the long and short (or lungs) circulation, form two suction or drawing pumps, while the two ventricles of the heart and the arteries of the long and short (or lungs) circulation

form two forcing-pumps. Thus we see that venous blood is drawn to the heart through the veins in consequence of a vacuum being formed, or which would be formed, by the expansion or opening of the auricles. While, on the other hand, the arterial blood is driven over the whole system by the contractile force of the ventricles and arteries. These physiological truths must be understood by the people before the propriety and frequently the absolute necessity of bleeding, to save the life of the patient in some cases of deranged action, can be fairly appreciated. As, for instance, when the iron of the blood is not properly oxydized, by the air breathed, the whole system is prostrated, and the free circulation of the blood is greatly impeded. The excessive quantity of blood in the arteries is the cause of weakness, and hence there is a tendency in the solids and fluids of the body to yield to the laws of fermentation and decay. In this state of the bloodvessels, and particularly when the whole system is in a high state of excitement, as in cases of pleurisy, childbed fever, and smallpox, there is no remedy which can give relief so soon as that of bleeding. It equalizes the quantity of blood between the arteries and veins, thereby taking off the backward pressure on the arteries and valve, and restoring the circulation to its healthy state, thus arresting the tendency of the fluids and solids to yield to the laws of fermentation and decay. It must be equally obvious that, to give relief, there can be no rule laid down by which the quantity of blood to be taken from the patient at any one time can be ascertained, but that of giving full relief to the action of the pulse.

Hence, the great popularity of bleeding in cases of pleurisy, childbed fever, etc., where these states of the bloodvessels are sure to exist; but, unfortunately for mankind, a lack of oxygen in the blood, its backward pressure upon the arteries and valve of the ventricle, and consequent depression of the pulse, have never been understood by the numbers of the schools; bleeding in such cases has thus been looked upon as an indispensable but random remedy, to be used, both as to time and quantity, as circumstances, or the courage of the practitioner, might suggest.

The remedy has been forced upon practitioners of the healing art, in these particular "diseases," from the fact of the impossibility of saving life without it, and not from the true cause of its necessity being understood by them.

The truth of this assertion we have abundantly shown by previous quotations from some of their best writers upon this subject.

Another great and important truth to which we wish to call the particular attention of our readers, and upon the proper understanding of which the future welfare of millions depends, is this: the state of the circulation indicated by the pulse being more or less round, hard, tense, depressed, etc., can exist with every state of "disease" to which the human system is liable, whether such "disease" be termed inflammatory, acute, or chronic. It is as often associated with toothache, obstinate sores, biles, swellings, eruptions, abscesses, constipation of the bowels, sore eyes, gradual loss of sight, intermitting fever, chronic rheumatism, approaching apoplexy etc., etc., as it is with pleurisy or any other inflammatory or acute state of deranged action, and this state of the circulation, as indicated by the pulse, is in truth the cause of the difficulty of their removal or "cure." This state of the pulse therefore must be removed either by bleeding, the abstraction of heat from the system, or by long-continued purging, before the "disease," whatever it may be called, or wherever it may be located, can be gotten rid of, since it is but the consequence of the state of the circulation of the blood as indicated by the pulse.

There is no remedy used by practitioners of medicine the effects of which upon the system are so little understood as that of bleeding. The cause of this is, that the pulse has never been properly studied in connection with breathing.

There are some states of deranged action in the system in which the tongue of the patient becomes dark and extremely dry. This symptom of the "disease" is looked upon as a very dangerous one—as concomitant with, and a part and parcel of the disease; whereas, in truth, it is the effect of a tense and de-

pressed state of the pulse, plainly perceptible to all who have accustomed themselves to feel the pulse properly. Now, we declare, that if, when the practitioner bleeds the patient until the pulse becomes free and soft, he does not find, before he has time to wipe his lancet, that the patient's tongue is moist and soft, every word we have written is false. And we further assert that a dark and dry state of the tongue cannot exist with a soft and free state of the pulse, as the existence of both at the same time is incompatible with the laws of the animal economy.

If the tongue of a patient is dark and dry, while the pulse is tense and depressed, no one will deny that the state of the circulation indicated by a tense and depressed pulse is incompatible with a healthy state of the secretions and excretions. If, on the contrary, after bleeding the patient until the pulse is soft and free, the tongue immediately becomes soft and moist, we think that no one can deny that this state of the circulation, as indicated by the pulse, is compatible with, and essentially necessary to, a healthy state of the secretions and excretions, and all other actions required for the complete development of the organs of the system; these facts, we think, must convince every rational mind that what has heretofore been called and treated as disease in the human system, is and can be nothing more than deranged action in its organization, originating from the violation of some law of the animal economy, causing the action in the organs to go on too fast, too slow, too strong, or too weak for their healthy development; and that the proper success of the healing art can only be attained when those who make it their study turn their attention to a proper understanding of the laws of the animal economy as they have been made manifest by the most recent discoveries of science.

When the medical schools turn their attention properly to the indications of the pulse to ascertain the true state of the circulation, and the requirements of the system, to bring any wrong action going on in it back to the healthy standard, and when they learn to resort to the most simple but efficient means of restoring the blood to its healthy temperature; of promoting

the healthy secretions and excretions of the system; and to cause the blood to be properly decarbonized and oxydized, by either or both the lungs and the liver, so that the action going on in the system may maintain itself at the proper point of force and frequency, then the practice of the healing art will have attained its highest degree of perfection.

The causes which have led to the present degraded, unscientific, and unprofitable practice of medicine are easily traced to their origin.

Up to the time at which Dr. CULLEN was Professor of the Theory and Practice of Medicine in the world-renowned College of Edinburgh, the objects and pursuits of practitioners of medicine were scientific, and they believed that the advancement of scientific knowledge could alone advance the success of the healing art. But, after he established his methodical nosology of diseases, and arranged into classes, orders, &c., all the unpleasant feelings, pains, and states of deranged action to which he believed the human system was liable under the head of "diseases,"* if a remedy by its stimulating effects made a person whose feelings were unpleasant feel better, it cured the "disease"; if it expelled air from the stomach and thereby caused a cessation of the pain, it cured the "disease"; and so with a highly inflammatory state of the system which required the loss of a gallon of blood, the bleeding only "cured" the "disease." These two words "disease" and "cured" have been used both by practitioners of medicine and the people in this vague sense, until almost all meaning and all relation as to cause and effect, are lost sight of, so that at the present day we find even mem-

* A word used very often by Dr. CULLEN; and that too with the same signification, whether applied to states of unpleasant feeling, to pains, or to highly excited cases of deranged action in the system, or whether these unpleasant feelings, pains, or cases of deranged action are caused by the escape of air into the stomach from undigested food, by the failure of the air respired by the lungs to decarbonize the blood, or by highly excited action in the bloodvessels by too much heat in the blood. In all these instances the general term "disease" is used. The same remark may be made in regard to the word "cured."

bers of the medical profession recommending cod-liver oil, or a few drops, powders, or pills—nostrums which perhaps have no effect upon the system at all; and if they have, it is imperfectly understood. For such attempts at the restoration of wasted lungs, or ulcerated livers, to a sound and healthy condition in a few days, poor deluded patients will pay money, hope on, and continue to suffer.

Not only have these effects been produced by DR. CULLEN'S system, and the promiscuous use of the words "disease" and "cured;" but it has set the heads of thousands to work to delude, by pretended discoveries of infallible remedies, professing to cure every disease to which the human system is liable. Almost every newspaper in the country is partly filled with advertisements of "remarkable cures;" and the apothecary shops and country stores are crammed with these infallible impositions upon the credulity of the sick.

To persons who have not investigated the subject for themselves, it would appear incredible that the list of medicines, admitted as curative by the colleges of medicine, amount to upward of five thousand, which we are taught to believe will really "cure," or help to "cure," the "diseases" for which they are proposed to be given. The volume entitled "The American Dispensatory" is a large-sized octavo, and contains some 1,380 closely-printed pages in small type, giving the history, medical qualities, and modes of operation of these remedies. This book is really a curiosity, as it is the most perfect compound of truth and falsehood that perhaps has ever been printed. There is not a remedy treated of in it but what is described as possessing certain positive qualities on the system, or on the "disease" itself, for its "cure." This is indeed true, if the organic action at the time they are used is in the proper state; but they are not true, if it is not in that state. As, for instance, if the pulse is at the proper point of force and frequency for the operation of purgative medicines, and the heat of the blood is also right, every article mentioned in the class of purgatives will have that effect. But if the action of the pulse, or the heat of the blood, is raised

above that point, or sunk below it ever so little, some of the medicines will lose their power in this respect; and so a change may go on in the state of the pulse and in the heat of the blood until even calomel fail to have that effect upon the bowels. So it is with emetics, diuretics, sudorifics, anodynes, etc. Opium, for instance, is certain to induce sleep if the skin of the patient is moist and soft, and the pulse not too strong and quick; but if the skin is dry and hot, and the pulse tense and hard, instead of rest and sleep, wakefulness and restlessness will be the consequence. Here is a labyrinth of uncertainty in which all young practitioners find themselves, when they first start in their profession, if they happen to have what are called bad cases of fever, etc., as neither the books they have read, nor the lectures they have listened to, give them any clue by which they may be directed aright. They are therefore frequently disappointed, and say,—“If I could have made the purgative operate;” or,—“If I could have induced the patient to sleep, I think I could have saved his life.”

In truth, the members of the schools of medicine, for the last sixty or seventy years, instead of trying to discover and teach what life is, and the laws of the animal economy by which it is governed, as well as to keep up the progress of medical, with that of the other sciences, have contented themselves with adding remedy to remedy until it takes the volume above mentioned to describe them. Like the alchemists of old, groping after the philosopher's stone, physicians have been as uselessly engaged in the discovery of specifics to “cure,” as it is termed, all the different states of deranged action under the term “diseases,” to which the human system is liable.

These erroneous ideas of “diseases” and “specifics” are all repugnant to the order instituted by a merciful and wise Creator, and their only service is to show the conceit and folly which the human mind may associate with the fair fame of science.

CHAPTER VI.

INDIVIDUAL CASES OF DERANGED ACTION—THEIR CAUSES, AND THE PROPER MEANS OF THEIR REMOVAL.

IF the action which is produced in an organized body by internal and external stimuli acting upon its inherent excitability, or power of being acted upon, is the life of that body ; and if the life thus produced is all which prevents its solids and fluids from yielding to the laws of fermentation and decay, then whatever will destroy that action or life, either by withholding the supply of internal and external stimuli, or by destroying the innate excitability of the organs of the system, will produce death, and cause its solids and fluids to yield to those laws.

If the healthy development of the organs requires that the action produced by external and internal stimuli upon its inherent excitability should be kept up constantly to a certain degree of force or power, then any change in that force or power of action, continued for a length of time, must produce unhealthy development, or what is called in popular language “disease.”

If we have made ourselves acquainted with what is the proper force requisite in the action going on in the system for the healthy development of its organs, we must know, when we feel and understand the pulse properly, and find it higher or lower, quicker or slower, than its healthy standard of action, that deranged action, or what is called disease, exists in the system ; and we must know also to what extent that deranged action or disease has gone.

And if we know the causes which produce undue power of action in the system, either above or below the point of healthy

development of its organs, then we know the causes which can produce what are called "diseases." Being thus informed, we are prepared to remove from the system of the patient, who is laboring under deranged action, either the deranged action itself, or that which produces it, and thus restore the action to the proper point for the healthy development of its organs, which is health.

Does it not seem strange, indeed, in this enlightened age, when we not only know that sufficient causes for deranging the action of the system exist in the system itself, and the laws of the animal economy, by which those causes not only tend to produce that derangement, but tend also to the total destruction of that action or of life itself, that men professing to be scientific and intelligent practitioners of the healing art, should still see their patients suffer and die, and yet refuse to yield their prejudices in favor of obsolete and antiquated dogmas to the plain dictates of science, common sense, and truth? For these have abundantly shown, since the progress of science has laid open, as it were, the great volume of Nature's laws, that the animal heat generated by breathing, when it is not sufficiently decarbonized to permit the secretions and excretions of the different organs to go on properly to carry it off down to the healthy point or degree, must accumulate in the blood; produce what is called fever, and become the immediate cause, both of decreasing the powers of life to resist the laws of putrefaction and decay, and of increasing the tendency of the solids and fluids of the body to yield to those laws. It serves likewise to derange the action of the heart and arteries in proportion to the quantity of excitability in the system at the time; to the state of imperfect decarbonization of the blood; and to the quantity of heat thus accumulated.

SMALLPOX.

Let us now turn our attention to the consideration of some of those states of deranged action in the human system, or "diseases," treated of by writers under particular names, and endeavor to understand what they are. We begin with

"smallpox," simply because it appears to us, that, if there be any state of deranged action to which the human system is liable, which has any claims to the epithet of "disease," in the sense in which that word is used and understood at the present day, smallpox is entitled to it; and, if there be any states, which may be successfully treated by the favorite practice of the present day, that is, by giving to the sick antidotes, specifics, etc., to "cure" it, smallpox is the one, because it always, as is supposed, propagates or continues itself by the agency of a specific contagion. Hence, if "like produces like"—a favorite doctrine of the present day—if one case of smallpox produces another case of smallpox, then whatever antidote, or specific remedy, will "cure" one case, should surely "cure" all. This is far from being the case. Although smallpox seems to be, and perhaps is, propagated by specific contagion, if we will inquire into the effects of that contagion upon the system, we shall find that it simply acts as an exciting cause to deranged action; and that its extent and force depend upon the very same causes upon which other states of deranged action depend; that the same laws of the animal economy govern in all, and that the very same objects have to be held in view in the practice, to restore the action in the system to the healthy state.

From these facts, we think, we are compelled to come to the conclusion that the virus of smallpox is simply a strong and somewhat permanent stimulant, acting upon the excitability of the organs of the system, and particularly upon those of respiration, which being thus brought into more rapid motion, more heat is produced in the blood, and this heat, acting upon the heart and arteries, gives to all the organs of the system increased action. In this disease, as in all other cases of deranged action, if the blood of the patient is properly decarbonized, if all plethora of the bloodvessels is removed, and if the heat of the blood is kept down to the healthy temperature, whilst the infection is being taken, and during the time it continues to act upon the system, then the peculiar secretions and excretions excited by this virus will be small (the formation of pox) and pro-

ceed easily, and the other secretions and excretions proceed healthfully, leaving the system restored.

But if, on the contrary, the blood of the patient, while being acted upon by the stimulating influences of the virus of smallpox, is in the state of imperfect decarbonization, and the system is plethoric and irritable, then the general secretions and excretions of the system, as well as those excited by the virus of smallpox, instead of flowing easily, will be checked, and the increased heat thus retained in the system will stimulate the actions of all its organs to the highest point. The blood will be driven into the large arteries by the ventricle of the heart faster than it can pass from the small arteries and capillaries into the commencement of the veins. It must of course fill back upon the larger arteries, first producing in the pulse the sensation of fulness and roundness, then hardness, tension, etc., and when it presses backwards upon the valve, that of oppression, depression, &c., and now, the peculiar secretions and excretions, caused by the virus of smallpox acting upon the system, will be checked as well as the others, and all the horrors of the worst kind of smallpox will have to be endured.

By reflecting upon the causes which produce these two extreme cases of smallpox, we can readily understand how all the intermediate states of the disease are brought about, and readily perceive the causes which make this disease dangerous to life. We can understand likewise the good effects which are produced by having patients prepared for it before inoculation, by giving them purgative medicines to insure the action of the liver decarbonizing the blood, by keeping them cool, and upon a spare diet, thus insuring that the patients' systems are in a proper state for receiving the stimulating effects of the virus. The act of inoculation itself does no good, but by using it the infection is given at the proper time.

After the reader has acquired a proper knowledge of the anatomy of the human system, particularly of the lungs, of the heart, bloodvessels, valves, etc., and is acquainted with the pulse, their causes, indications, etc., with the nature of at-

mospheric air, its composition, causes of impurity,—how it affects the blood in the lungs by respiration, by taking away a portion of its carbon, and giving vital heat ; and how heat is carried off from the system by the secretions, excretions, etc., and understand the laws of the animal economy by which these things are effected, he is prepared to read understandingly the following graphic description of smallpox by Dr. WM. CULLEN, some seventy years ago, to explain the causes of error under which the learned doctor labored, and why he supposed there were two kinds of smallpox : “ The smallpox is a disease arising from a contagion of a specific nature, which first produces fever ; and, on the third or fourth day thereof, an eruption of small red pimples. These are afterwards formed into pustules, containing matter, which, in the course of eight days from the time of the eruption, is changed into pus. After this, the matter dries, and falls off in crusts.

“ This is a general idea of the disease, but there are two particular forms or varieties of it, well known under the appellations of the *distinct* and the *confluent*, which require to be specially described.

“ In the former, or the *distinct* smallpox, the eruptive fever is moderate, and appears to be evidently of the inflammatory kind, or what we name a synocha. It generally comes on about midday, with some symptoms of a cold stage, and commonly with a considerable languor and drowsiness. A hot stage is soon formed, and becomes more considerable on the second and third days. During this course, children are liable to frequent startings from their slumbers ; and adults, if they are kept a-bed, are disposed to much sweating. On the third day, children are sometimes affected with one or two epileptic fits. Toward the end of the third day, the eruption commonly appears, and gradually increases during the fourth ; appearing first upon the face, and successively on the inferior parts, so as to be completed over the whole body on the fifth day.

“ From the third day the fever abates ; and against the fifth it entirely ceases. The eruption appears first in red spots, hardly

eminent, but by degrees rising into pimples. These are generally upon the face in small number; but, even when more numerous, they are separate and distinct from each other. On the fifth or sixth day, a small vesicle, containing an almost colorless or whey-colored fluid, appears upon the top of each pimple. For two days, these vesicles increase in breadth only, and there is a small hollow pit in their middle, so that it is only against the eighth day that they are raised into spheroidical pustules.

“These vesicles or pustules, from their first formation, continue to be surrounded with an exactly circular inflamed margin, which, when the pustules are numerous, diffuses some inflammation over the neighboring skin, so as to give somewhat of a damask rose-color to the spaces between the pustules. As the pustules increase in size, if they be numerous on the face, against the eighth day the whole of the face becomes considerably swelled, and, in particular, the eyelids are so much swelled as entirely to shut the eyes.

“As the disease thus proceeds, the matter in the pustules becomes by degrees more opaque and white, and at length of a yellowish color. On the eleventh day, the swelling of the face is abated, and the pustules seem quite full. On the top of each a dark spot appears; at this place the pustule, on the eleventh day, or soon after, is spontaneously broken, and a portion of the matter oozes out; in consequence of which, the pustule is shrivelled, and subsides; whilst the matter oozing out dries, and forms a crust upon its surface.

“Sometimes a little only of the matter oozes out; and what remains in the pustule becomes thick, and even hard. After some days, both the crust and the hardened pustules fall off, leaving the skin which they covered of a brown-red color; and it is only after many days that the skin in these places resumes its natural color. In some cases, where the matter of the pustules has been more liquid, the crusts formed by it are later in falling off, and the part they covered suffers some desquamation, which leaves in it a small pit or hollow. This is the course of things on the face; and, successively, the pustules on the rest of the body take

the same. The matter of the pustules, on the arms and hands, is frequently absorbed; so that, at the height of the disease, these pustules appear as empty vesicles. On the tenth and eleventh days, as the swelling of the face subsides, a swelling arises in the hands and feet, but again subsides as the pustules come to maturity.

“When the pustules on the face are numerous, some degree of pyrexia appears on the tenth and eleventh days, but disappears again after the pustules are fully ripened; or perhaps remains in a very slight degree till the pustules on the feet have finished their course. It is seldom that, in the distinct smallpox, the fever continues longer.

“When the pustules on the face are numerous, some uneasiness in the throat, with a hoarseness of the voice, comes on upon the sixth or seventh day, and a thin liquid is poured out from the mouth. These symptoms increase with the swelling of the face; and the liquids of the mouth and the throat thicken, and are with difficulty thrown out. There is, at the same time, some difficulty of swallowing; so that liquids taken in to be swallowed are frequently rejected or thrown out by the nose. But all these affections of the fauces abate as the swelling of the face subsides.

“In the other form of smallpox, or what is called the confluent, the course of the disease is, in general, the same with that we have described; but the symptoms of every stage are more violent, and several of the circumstances are different.

“In particular, the eruptive fever is more violent. The pulse is more frequent and more contracted, approaching to that state of pulse which is found in the typhus. The coma is more considerable, and there is frequently a delirium. Vomiting, also, is a common symptom, especially at the coming on of the disease. In very young infants, epileptic fits are sometimes frequent on the first days of the disease, and sometimes prove fatal before any eruption appears; or they usher in a very confluent and putrid smallpox.

“The eruption appears more early on the third day, and it is frequently preceded or accompanied with an erysipelatous efflores-

cence. Sometimes the eruption appears in clusters, like that of measles. When the eruption is completed, the pimples are always more numerous upon the face, and at the same time smaller and less eminent. After the eruption, the fever suffers some remission, but never goes entirely off; and after the fifth or sixth day it again increases, and continues considerable through the remaining course of the disease.

“The vesicles formed on the tops of the pimples appear sooner, and, while they increase in breadth, do not retain a circular, but are every way of an irregular figure. Many of them run into one another, insomuch that very often the face is covered rather with one vesicle than with a number of pustules. The vesicles, so far as they are anywise separated, do not arise to a spheroidical form, but remain flat, and sometimes the whole of the face is of an even surface. When the pustules are in any measure separated, their circumference is not bounded by an inflamed margin, and the part of the skin that is free from the pustules is commonly pale and flaccid. The liquor that is in the pustules changes from a clear to an opaque appearance, and becomes whitish or brownish, but never acquires the yellow color and thick consistence that appear in the distinct smallpox.

“The swelling of the face which attends the distinct smallpox when they are numerous, and almost then only, always attends the confluent, comes on more early, and arises to a greater degree, but abates on the tenth day, and, on the eleventh, still more. At this time the pustules or vesicles break, and, shrivelling, pour out a liquor that is formed into brown or black crusts, which do not fall off for many days after. Those of the face, in falling off, leave the parts they cover subject to desquamation, which pretty certainly produces pittings.

“On the other parts of the body, the pustules of the confluent smallpox are more distinct than upon the face, but never acquire the same maturity and consistence of pus as in the properly distinct kind.

“The salivation, which only sometimes attends the distinct smallpox, very constantly attends the confluent; and both the

salivation and the affection of the fauces above mentioned are, especially in adults, in a high degree. In infants, a diarrhea comes frequently in place of the salivation.

“In the confluent smallpox there is often a considerable putrescency of the fluids, as appears from the petichie, from serous vesicles, under which the skin shows a disposition to gangrene, and from bloody urine, or other hemorrhage, all of which symptoms frequently accompany this disease. In the confluent smallpox, the fever, which had only suffered a remission from the time of eruption to that of maturation, is often, at or immediately after this period, renewed with considerable violence. That is what has been called the secondary fever; and is, in different cases, of various duration and extent.

“We have thus endeavored to describe the various circumstances of the smallpox; and from the difference of these circumstances the event of the disease may be determined. The whole of the prognosis may be nearly comprised in the following propositions:

“The more exactly the disease retains the form of the distinct kind it is the safer; and the more completely the disease takes the form of the confluent kind it is the more dangerous.

“It is only when the distinct kind shows a great number of pustules on the face, or otherwise, by fever or putrescency, approaches to the circumstances of the confluent, that it is attended with any danger.

“In the confluent smallpox there is always danger; and this is always more considerable and certain, according as the fever is more violent and permanent, and especially as the marks and symptoms of putrescency are more evident.

“When the putrid disposition is very great, the disease sometimes proves fatal before the eighth day; but in most cases it is on the eleventh that death happens—and sometimes it is put off till the fourteenth or seventeenth day. Though the smallpox should not be immediately fatal, the more violent kinds are often followed by a morbid state of the body of various kinds and events. These consequences, as I judge, may be imputed some-

times to an acrid matter produced by the preceding disease and deposited in different parts, and sometimes to an inflammatory diathesis produced and determined to particular parts of the body.

“It is, I think, agreed among practitioners, that, in the different cases of smallpox, the difference chiefly depends upon the appearance of distinct or confluent; and from the above description of these kinds, it will appear that they chiefly differ in the period of the eruption, in the number of pustules produced, in the form of the pustules, in the state of the matter contained in them, in the continuance of the fever, and, lastly, in the danger of the disease.

“Upon inquiring into the causes of these differences, we might readily suspect that they depended upon a difference of the contagion producing the disease. This, however, is not probable; for there are innumerable instances of the contagion arising from a person laboring under the smallpox of the distinct kind, producing the confluent, and the contrary.

“Since the practice of inoculation became frequent, we have known the same variolous matter produce in one person the distinct, and in another the confluent smallpox. It is, therefore, highly probable that the difference of the smallpox does not depend upon any difference of the contagion, but upon some difference in the state of the person to whom it is applied, or in the state of certain circumstances concurring with the application of the contagion.

“To find out wherein the difference in the state of the person to whom the contagion of smallpox is applied consists, I observe, that the difference between the distinct and the confluent smallpox consists especially in the number of pustules produced, which, in the distinct, are generally few; in the confluent, always many. If, therefore, we shall be able to discover what in the state of different persons can give occasion to more or fewer pustules, we shall probably be able to account for all the other differences of distinct and confluent smallpox.

“It is evident that the contagion of smallpox is a ferment with respect to the human fluids, and assimilates a greater part

of them to its own nature; and it is probable that the quantity thus assimilated is in proportion to the bulk of their several bodies, nearly the same in different persons. This quantity passes again out of the body, partly by insensible perspiration, and partly by being deposited in the pustules; but if the quantities generated be nearly equal, the quantities passing out of the body by the two ways mentioned are very unequal in different persons; and, therefore, if we can explain the causes which determine more to pass by the one way than the other, we may thereby discover the causes which give occasion to more pustules in one person than another.

“The causes which determine more of variolous matter to pass by perspirations, or to form pustules, are probably certain circumstances of the skin, that determine more or less of the variolous matter to stick in it, or to pass freely through it. The circumstance of the skin, which seems to determine the variolous matter to stick in it, is a certain state of inflammation depending much upon the heat of it. Thus we have many instances of parts of the body, from being more heated, having a greater number of pustules than other parts. In the present practice of inoculation, in which few pustules are produced, much seems to be owing to the care that is taken to keep the skin cool. Parts covered with plasters, especially with those of the stimulating kind, have more pustules than other parts. Further, certain circumstances, such as adult age and full-living, determining to the phlogistic diathesis, seem to produce a greater number of pustules, while the contrary circumstances have contrary effects.

“It is therefore probable that an inflammatory state of the whole system, and particularly of the skin, gives occasion to a greater number of pustules; and the causes of this may likewise produce most of the other circumstances of the confluent small-pox, such as the period of eruption, the continuance of the fever, the effusion of a more putrescent matter and less fit to be converted into pus; and, what arises from thence, the form and other circumstances of the pustules.”

It must be borne in mind by our readers that these minute

descriptions of two kinds of smallpox were written, and the opinions of the author, as to the nature and characteristics of the disease, formed and promulgated before science had made known to men the compound nature of atmospheric air, and the effects upon the blood of breathing it.

Of course, the uses of the lungs in the animal economy were unknown to CULLEN; he could know but little, if anything, of the source of vital heat to the blood; and he could know absolutely nothing of the decarbonization of the blood by the air breathed; nor of the oxydation of its iron. Consequently, he could form no correct idea of the effects of promoting the secretions and excretions of the different organs of the system, in carrying off the excess of vital or animal heat in the blood, which is called "fever"; nor of purifying the blood of an excess of carbon by promoting the secretion of bile by the liver. This ignorance of course exonerates him from any blame for believing that all which could ever be known of smallpox, or of any similar affection of the system, must be learned from experience and close observation of their peculiar characteristics.

But there is no excuse for the members of the medical profession of at least the last twenty years, for their unwarrantable neglect in not bringing the discoveries of science to the assistance of the healing art; and there is no way of accounting for this neglect, but by the fact which we have adverted to several times before—the belief becoming more and more fixed on their minds—that diseases were substantive somethings, which were beyond the laws of nature, and could only be controled by specifics or antidotes, which were alone to be discovered by chance, or long-continued observation and experience.

Of all the kinds of deranged action to which the human system is liable, there are none better calculated to show the falsity and absurdity of this belief than this of smallpox, and to show also that all healthy actions going on in the system are governed by, and under the control of, the fixed and unalterable laws of the animal economy, and all deranged action the effect of their violation.

Our author above quoted, when treating of the proper manner of preparing a person for taking the infection of smallpox, says : "The preparing the person to be inoculated by abstinence from all animal food for some time before inoculation." "The preparing the person by courses of mercurial and antimonial medicines." "After inoculation, the continuing of vegetable diet, as well as the employment of mercurial and antimonial medicines ; and at the same time freely employing purgatives." "Both before and after inoculation, taking care to avoid all external heat, either from the sun, artificial fires, warm chambers, much clothing, or being much in bed ; and, on the contrary, exposing the person to free and cool air." "Upon the appearance of the eruptive fever, the rendering of it moderate by the employment of purgatives ; by the use of cooling and antiseptic acids ; and especially by exposing the person frequently to a cool, and even a cold air."

"In the other form of smallpox, or what is called the confluent, the course of the disease is, in general, the same with that we have described, but the symptoms of every stage are more violent, and several of the circumstances are different." "In particular, the eruptive fever is more violent ; the pulse is more frequent and more contracted, approaching to that state of the pulse which is found in typhus." "The coma is more considerable, and there is frequently a delirium, etc."

After all that has been said by this author (who may be looked upon as the father of the allopathic system, and whose writings upon the subject of fevers are still text-books), of the necessity of cooling remedies ; of medicines operating to carry off the heat of the fever of smallpox ; after the discoveries which have been made since his time, of the nature of atmospheric air ; of the uses of the lungs ; of the true causes of animal heat ; that the faster the lungs are made to respire, the faster heat will be generated ; and that if the temperature of the human blood rises higher than 98° "fever" must be the inevitable consequence, does it not seem really strange that the members of the allopathic school should at this day theorize upon and prac-

tice medicine more than they ever did before, as though fever heat and animal heat were distinct kinds of heat, proceeding from different causes, and that the one may be lessened without lessening the other? If they do claim this distinction, we would ask, "Whence comes fever heat?" If they do not, we ask, "Why, by the application of cold water to the body in all cases, they object to lessening the animal heat when it is in excess, and called 'fever.'"

As if still further to show the unity of "diseases," independent of their causes,* our author, although he has divided what he calls "diseases" into classes, orders, etc., goes on to say (as above quoted), "that the pulse in confluent smallpox approaches to that state which is found in typhus fever," thus showing that the state of the pulse is always in correspondence with the state of what is called the "disease," and is, in truth, the "disease" itself.

We have now endeavored to prove that which forty years' study, practice, and experience have taught us to be true, viz., that what is called "disease" is in all cases the effect of deranged action in the blood-vessels. Whether the disease be excited by the scratch of a pin, a grain of sand in the eye, a decayed tooth, a broken bone, a sudden withdrawal of heat from the body or any of its parts, and its sudden reapplication by the virus of smallpox, or any other cause; or whether such disease show itself in the form of inflammation of the skin, the eye, toothache, tumor, abscess, running sore, cancer, proudflesh, gangrene, dropsy, cough, chills, fever, general inflammation, or in any other way, it is the effect of either too high or too low action in the blood-vessels. And we assert that it is an invariable law of the animal economy that no such disease ever has or ever can exist for any length of time without there being deranged action in the

* All diseases are states of deranged action in the organs of the system, brought about by a disproportion between the quantity of stimuli acting upon the inherent quantity of excitability, or power of being acted upon, in the system at the time, and thereby producing a state of action in its organs which is incompatible with their healthy development.

blood-vessels, either above or below the point of healthy development to support it; nor can such deranged action continue in the blood-vessels, after the blood is properly decarbonized. It is true, that debility in the action of the blood-vessels may exist, and a cancer or a sore, or something of the kind, be the consequence; which may sometimes be cured by stimulating remedies, which excite increased local action in the blood-vessels up to the healthy point, and the healing process go on. On the contrary, where the general action in the blood-vessels is a little too high, and a sore of some kind exists, by the application of cooling and sedative remedies the local action of the blood-vessels may sometimes be kept down to the healthy point, and the healing process go on to a cure. But we all know how apt these cases are to break out again, or to destroy the life of the patient.

These facts, instead of being exceptions, go to prove, when properly understood, the existence of the above-mentioned law of the animal economy. And they go to show also, to the observing mind, the causes which have served, in defiance of the progress of the arts and sciences, to keep the minds of practitioners of the healing art in ignorance and error as to the proper objects they should always keep in view in the practice of their profession. Hence the belief entertained by them that experience, instead of science, is the anchor of hope to the afflicted, and their unceasing attempts to find out some panacea to "cure" the "disease," instead of making themselves acquainted with the proper temperature of the blood for healthy action, its causes of change, and the proper force, elasticity, and frequency of action in the blood-vessels of the system, necessary for the healthy development of its organs, as indicated by the pulse.

Whenever physicians are called upon to visit a patient whose blood is above or below the healthy degree, and the action in the blood-vessels is deranged from its healthy force and frequency (which is sure to be the case where disease exists), if they will adopt the most prompt and efficient means in their power to bring the temperature of the blood and the action of the blood-vessels back to the healthy standard, let the name given to the "disease"

be what it may, we are confident that the patient will be sooner relieved than by any other method. And we further say, that no remedy ever did or ever can give relief without first bringing the pulse to a healthy state of action. If, while the pulse is at that standard, and the blood is brought to the proper temperature, it is purified by the promotion of the secretions and excretions, the relief will be permanent; but, otherwise, there may be what is termed a "relapse"—a word used as an excuse for ignorance.

There is no state of derangement to which the action in the system is liable, so well calculated to give us proper ideas as to what disease in the system is, as smallpox, if we study it properly; because the amount of derangement of action which follows after inoculation is always in proportion to the purity and healthy temperature of the blood, and to the state of the secretions and excretions at the time of inoculation, and during the whole progress of the disease; and because, if we can form a correct idea of one disease, or affection of the system, and have a knowledge of the pulse and its indications, we must understand all diseases, as they are all dependent upon the same general principles, and governed by the same laws. But if we are ignorant of the laws which govern the animal economy, and have no knowledge of the pulse and its indications, diseases must ever remain mysteries to us, and the practice of the healing art be governed by a mixture of knowledge, ignorance, bigotry, superstition, credulity, and imposture.

We now attempt to give to our readers such a statement of smallpox as will, we hope, not only convey a correct idea of it, but of all other diseases to which the human system is liable. But, before doing so, we deem it necessary to repeat some of the laws of life and of the animal economy before mentioned, which cannot be too often repeated, nor too forcibly impressed upon the memory.

Life in the body is the action going on in it; that action is the effect of stimulating influences upon an innate principle called "excitability," or the power of being acted upon, which

“excitability” is constantly being accumulated in the organs of the body and worn down by the action, just as the heat, which is constantly being accumulated in the blood by the action of the air upon it in the lungs, is carried off by the secretions and excretions.

Heat, the great exciting principle to action in the heart and blood-vessels, is generated in the blood as it passes through the lungs in contact with the air, and is then called animal or vital heat; and consequently, the quantity of heat generated in the blood, and the perfect or imperfect decarbonization of it, in a given time, must depend upon the number of breathings of the lungs, and the purity of the air breathed. The quantity of vital heat in the blood, in a healthy state of the system, as indicated by the thermometer when its bulb is placed under the tongue, etc., is 98° . Whenever the secretions and excretions of its organs fail to carry off this heat of the blood down to 98° , then deranged action, or “disease,” must be the certain consequence; and the extent or force of such deranged action must be in proportion to such failure.

For the better understanding of this deranged action or “disease” brought about by the failure of the blood to be decarbonized to the healthy point, and the consequent retention of an excess of vital heat in the blood, we have proposed an imagined scale of 30° , the first 10° of which commences with action in the blood-vessels at its lowest possible state next to death, and goes up until the 10° represents the healthy state of that action. The next 10° begins with deranged action in the blood-vessels above the healthy point, and goes up until it reaches the 20° , or highest point of action to which the heart and arteries can go without backward pressure of the blood upon the arteries and valves of the heart. The third 10° represents the amount of backward pressure which takes place in the arteries and on the valves of the heart, in consequence of the blood not passing from the small arteries and capillaries into the commencement of the veins as fast as it is driven into the large arteries by the left ventricle of the heart. This state of the circulation will be

easily understood by every person who is acquainted with the anatomy of the heart and blood-vessels ; it can be detected instantly, on feeling the pulse, by any person who has made himself acquainted with its indications.

This state of the pulse is common to confluent smallpox, and to all fevers which partake of the character of what is called in the schools, "typhus," "typhoid" and "nervous"; it is the cause of their peculiar characteristics. Whenever any disease, no matter under what name it goes, or by what it was at first produced, becomes worse and worse, until it partakes of the "typhus," "typhoid" or "nervous" character, the practitioner of the healing art in attendance may be sure that this backward pressure of the blood upon the arteries and valves of the heart will be evident in the pulse, thus verifying the remark of Dr. CULLEN previously quoted : "The pulse in confluent smallpox is more frequent, and more contracted, approaching to that which is found in typhus."

Heretofore, in treating of the effects of the secretions and excretions upon the system, of their carrying off the heat of the blood, etc., we confined our remarks to those which flow from organs prepared by the wisdom and goodness of the Creator for that purpose. But the protection of life is not left by its Almighty Author entirely to them, there being other secretions which produce, partially, the same effects upon the system. But some men, being ignorant of the laws of the animal economy, and eager to establish their own opinions as truths, and to control the opinions of others, have perverted the wise and conservative laws of the Creator for the protection of the lives of his creatures, into engines of His wrath and vengeance to punish and destroy. Hence, we have the two classes of diseases called "phlegmasia," or the disease of "abscesses," "boils," etc., and "exanthemata," or the disease of eruptions.

To understand these classes of disease, we must always bear in mind that all causes of irritation to the system excite in it an increased disposition to breathe, which is sure to produce an increased development of heat in the blood ; and if the blood

is not at the healthy point of decarbonization, which will be the case if the air we breathe is not pure, and under the proper degree of atmospheric pressure, the organs of secretion and excretion will fail, in some part of the system, in the performance of their duties, which may sometimes be discovered in a dryness of the skin, mouth and tongue, by a constipated state of the bowels, etc., etc.

In this state of the blood, and of the secretions and excretions, if the smallest wound be inflicted upon the skin, or in the flesh, by even the scratch of a pin, or by the sting of a bee, it will become the centre of irritation, and inflammation in the part is almost certain to follow. This inflammation, before science and the discoveries of anatomy had, as it were, opened the door of knowledge to the minds of men, was supposed to be the effect of what is called the "*vis medicatrix naturæ*," or blind nature. But now, we know that all the arteries of the system have their accompanying nerves of sensation or feeling, while the veins have none. Consequently, as soon as a cause of irritation, whether it be from the scratch of a pin, the sting of a bee, or anything else, is inflicted upon one artery, it is communicated to all the arteries of the system, or perhaps, at first, to those of its immediate neighborhood, and an increased determination of blood takes place to the point of irritation. While the veins, not having this means of communicating the existence of irritation, nor any power inherent in themselves of acting, if they had, continue in their natural state of action. In this way both blood and heat accumulate in the vessels around the point of irritation, and is called inflammation.

It must be evident that this inflammation would now go on spreading until the whole system became affected, if, as we before said, the Creator had not in His goodness provided another law of the animal economy to give relief. This law is, that as soon as the blood is obstructed in its circulation, and rises in its temperature to a certain point, a change will take place in its constituent elements, and in this change will be involved even the smaller blood-vessels themselves. This changed blood is

secreted into the cavity thus formed in the state of pus or matter, and the inflammation of the surrounding arteries is relieved.

The nature and causes of general fever and of local fever, or inflammation and its causes, have been sufficiently explained. It has been made evident to the mind of the reader that general fever may exist without local fever, but that local fever cannot exist to any extent without some degree of general fever, or, at least, the cause that produces it being in the system, as, without it, all wounds would soon heal and be well; and that the extent to which local fever or inflammation will go is dependent upon the extent of the general fever and its cause; or, in other words, upon how much the blood is heated above 98° , and kept so by increased breathing, clothing, or other causes; and how much the blood fails of being properly decarbonized.

Here we take the liberty of asserting it as a fact, and defy successful contradiction, that although the schools of medicine have established the belief in the public mind that there are two orders of diseases called phlegmasia and exanthemata, which have different orders of each, such as boils on the surface of the body, "white swelling" (which is, in truth, nothing more than a boil more deeply seated amongst the muscles and other organs), inflammation of and abscesses in the liver, the lungs, the pleura, etc., belonging to the first of these orders, and the eruption of smallpox, measles, etc., belonging to the latter,—and although there have been many volumes written to point out their several causes, characteristics, and means of cure, yet we say they are all of the same nature, and are to be removed, or "cured," by the same means, only differing in power and degree as the causes which produce them differ in power and degree.

If the blood fails ever so slightly of being properly decarbonized, or its temperature raised but little above the healthy point, or, from any other cause, deranged action takes place on the surface of the body, the formation, secretion, and excretion of one boil will be sufficient to take from the blood its excess of carbon, and power of retaining heat above the healthy point. If in this state of the blood deranged action is excited in the

liver, lungs, pleura, etc., the "disease" will be slight and easily removed if early and properly attended to,—or if the blood is acted upon by the virus of smallpox, measles, etc.,—the increased action excited in the heart and arteries will not be great, and the formation, secretion, and excretion of a few pustules, or pox, will be sufficient to restore the system to the healthy state.

But in any of these "diseases" (whether they belong to the order of phlegmasia or exanthemata), if the blood be more and more imperfectly decarbonized, and is thereby enabled to retain more and more heat from more imperfect secretions and excretions, they will, in the same proportion, become worse and worse, until from one boil there will be many, and so on until the disease will be called "the plague"; in the smallpox, from a few pustules, they will go on increasing until the whole body will not afford surface for them. When the pulse, from these causes, reaches the point which is "similar to typhus" (as expressed by CULLEN), and the backward pressure of the blood on the sides of the arteries and upon the valves of the heart produces a tense and depressed state of the pulse, what is called healthy matter can no more form in boils and abscesses than it can form into pustules in confluent smallpox. Hence, we must clearly see, that the formation of what is called healthy matter, whether the disease be of the order of phlegmasia or of exanthemata, is, in all cases, dependent upon an open and free state of the pulse; or, in other words, that it must not rise above the 20° of the scale above laid down.

But it is not unfrequently the case, in the commencement of these states of deranged action in the system, that, by a judicious practice, the pulse may be changed from an oppressed and tense state into an open and free one, and in that way a healthy state of the secretions be brought about.

The customary and well-known preparatory treatment against smallpox in its unmodified forms would have afforded an abundant source of information to physicians, not only for the management of that, but of all other states of deranged action to which the human organization is liable, but for the unfortunate

fact we have before referred to, viz., that they looked upon smallpox, as well as all other diseases, as individual and independent somethings, instead of looking upon them as states deranged from the healthful standard of action, which is dependent upon causes acting both externally and internally upon that organization to produce such action.

In preparing patients to receive the infection of smallpox, the first great object is, to get them perfectly cool. To do this, they are deprived of much of their ordinary clothing, both night and day. Neither a blanket nor a feather-bed are deemed admissible. The surface of the body is not only to be made cool, but it must be clean, so that the pores of the skin may transmit both heat and moisture easily. The next most important object is, to evacuate of their contents the stomach and bowels by the use of purgative medicines, so that there might be nothing left in them of a stimulating or irritating nature, while at the same time there must be evidence that the liver secretes bile easily. The diet used throughout the whole course must not only be cold, but it must be such as neither stimulates nor irritates, and scarcely nourishes. In this way, the heat of the system, and the action in the arterial part, as indicated by the pulse, is brought down a little below the healthy standard ; but if it is not done satisfactorily by these remedies, from the lack of time, etc., bleeding the patient is resorted to.

The patient being thus prepared is inoculated, but the cooling and sedative course of treatment, does not stop here ; it is kept up until all influence of the virus is gone. If too much "fever" comes on during the progress of the case (which is nothing more than an increase of animal heat in the system, produced by increased breathing, caused by the stimulating effects of the virus upon the heart, arteries, and lungs), all the remedies used before to carry off the heat of the blood, and to reduce the action in the pulse, are to be used still more freely. If there is too much inflammation at the place of inoculation, cold water freely applied is sure to take it out, if the general action is not greatly too high.

The above-mentioned practice being carried out properly, not one patient in a hundred will suffer much from going through the smallpox. In fact, we may say with truth and certainty, that if it is properly attended to, and there is no defect in their organization, no one can suffer from it.

In reflecting upon the preparatory treatment, as well as that pursued during the whole course of smallpox, there are two circumstances which should strike our minds with a great deal of force:

1. During the preparation for the disease and its continuance, patients are exposed to cold much more than in healthy life, yet no one ever takes a cold—a thing usually so much feared; but so soon as they return to their ordinary courses of life they are thus liable. This should teach us that what is called a “cold” is not the necessary consequence of the application of cold to the system, but of the state of the blood.

2. In the smallpox, both general fever and local fever, or inflammation, are treated as simply the effects of too much heat in the blood; a treatment by far the most successful. But, if local fever come on from any other cause than smallpox, there are many remedies recommended for its removal; if general fever come on from any other cause, it is, by the decision of the faculty, to be treated as though it originated in almost anything else but too much heat in the blood.

In truth, the doctors of the allopathic school have told the people of this “disease” and of that “disease,” and of this remedy “curing” and of that remedy “curing,” until they have brought them to believe that the Creator has made their bodies liable at any time, and under all circumstances, to be attacked by things called “diseases”; and that they can only be driven off by their compounded drugs, etc., instead of teaching them the laws of life and the consequences of their violation.

In this disease of smallpox, we must see the truth of, and the necessity for, a scale of the pulses for the better understanding of it by new beginners in this study. For whenever the pulse in smallpox either falls below the point of healthful action, the 10°

of the scale, indicated by too much softness and weakness, or rises so high as to be affected by the backward pressure of the blood upon the sides of the arteries and valve of the heart (approaching to typhus), indicated by tension, oppression, etc., above the 20° of the scale, the secretions and excretions are sure to be affected and unhealthy. So it is in all other diseases, or states of deranged action, to which the human system is liable. If this truth were generally known and understood, it is impossible to calculate the suffering and life that would be saved, as well as trouble and perplexity to the suffering practitioner. As soon as he had made himself acquainted with the state of the pulse, he would be able to account for the state the secretions and excretions were in, let the name of the disease (as it is called) be what it might. If the pulse were below the point for healthy secretion, remedies would be given to raise them; if too high, to lower them to the proper standard of action; properly proportioned to the state of the pulse, relief would be the certain consequence, while, agreeably to the system of practice of the present day—as no author which the writer of this has ever read attempts to describe the pulse in all the stages of the diseases of which they treat—the practitioner has to form his opinion of the case by the similarity which exists between the one he is then treating and some other that he has seen, or some one he has read of, without any description being given.

For a writer on the practice of medicine to treat of any particular disease, or state of deranged action in the system, without giving a particular description of the state of the pulse at the time that he advises a particular remedy to be used, is certainly attempting to lead his readers into dogmatical and empirical practice, if nothing worse.

The use of the lancet will certainly be beneficial in all diseases (whatever name may have been given to them) in which the pulse is hard and tense; but it will do injury, if it does not cause the death of the patient, if the pulse is soft and weak. There is no remedy (however simple it may be) but will have a

bad effect where the pulse is too soft and weak ; but, when hard and strong, a good effect.

In what are often looked upon as cases of simple intermitting or remitting fevers, the pulse is tense and hard. Such cases are found to be difficult to cure, from the simple fact, above alluded to, that practitioners are taught to practice medicine from the name given to the disease, and from the external symptoms ; consequently, they are treated with tonics and stimulants, which fail of success. Whereas, if they had been taught to take the pulse for their guide, they would at once have understood the nature of the deranged action going on in the system, and the proper remedy would have been adopted by them.

We have known serious consequences to result to patients in measles, and other diseases, from the administration of small doses of spirits of nitre (as simple as this remedy is supposed to be) before the pulse was low enough to bear it. To these might be added thousands of other instances of bad consequences resulting from physicians of the healing art trying to practice it without first making themselves fully acquainted with the different indications of the pulse.

The practitioner of medicine has at his command the following means for lowering permanently the pulse down to the point of healthy action, which we mention in the order of their power upon the system, and which he must use agreeably to the dictates of his judgment, to suit the necessities of the case, let the name given to the deranged action of the system be what it may.

1. Bleeding.

2. The application of cold to the body in different ways, but which should be so used as to equalize the heat of the body as nearly as possible.

3. Calomel.

4. Other purgative medicines, which promote the secretions and excretions.

We remark that it is true that all the remedies mentioned in the *materia medica* of the schools have the effects upon the system attributed to them when the pulse is at the proper point for

effects to be produced; but it is not true that they have those effects specifically, and independently of the state of the pulse.

Calomel, we believe, is the most certain of the whole class as a purgative. But neither calomel, nor any other medicine of its class, can produce purging when the pulse is greatly above or below the healthy point of action.* But so soon as a high state of the pulse is brought down nearly to the healthy point, then calomel will have its effect. On the contrary, where the pulse has been greatly below the healthy point, and brought up to it by the use of stimuli, the milder the purgative is, the surer it is to have the effect of purging.

Again, opium is treated of by writers as being certain to compose the system and to induce sleep; but this assertion is only conditionally true. Let the pulse be soft and the skin moist, composure and sleep will certainly follow the administration of this medicine in proper quantities. On the contrary, if the pulse be hard and strong, and the skin dry and hot, effects will follow just the reverse of composure and sleep.

Our space will not allow us to treat of the different effects produced by the different classes of medicines, in different states of the pulse, different degrees of heat in the blood, etc. We must, therefore, content ourselves with saying that the effects of all medicines upon the system are greatly modified, and sometimes entirely changed, by different states of the pulse, heat of the blood, etc., at the time they are taken; and that they are certain to produce the effects claimed for them by writers, only when the pulse, the heat of the blood, etc., are in the right state. Hence, the perplexity, disappointment, etc., met with by practitioners in their use, and the increased suffering of many of their patients.

In treating of the use of remedies in smallpox, we must say that, where the pulse is so hard and strong as to produce the confluent kind (as it is called), that is, above the point at which healthy matter can be formed and secreted, there are but two

* This wise law in the animal economy has saved the lives of thousands.

remedies which can give immediate relief. These are, the use of the lancet, and the abstraction of heat from the body by the use of cold water, or in any other convenient way.

If, by the use of one or both of these remedies, the pulse is brought nearly to the healthy point, then any mild purgative will promote the secretion of bile, and the consequent decarbonization of the blood, carrying off the heat above the healthy point. But if, after the use of both of the above-named remedies, the pulse should still be too hard and strong, then calomel should be the remedy resorted to in connection with them to bring the pulse to the proper standard.

It should be constantly borne in mind, that the number of pustules formed, and quantity of matter secreted, will be in proportion to the state of the pulse above the healthful point of action, and below the point which produces the confluent state of the disease; or, in other words, above the 10° , and below the 20° of the scale above proposed.

CONSUMPTION.

The next disease, or state of deranged action in the system, to which we invite the attention of our readers, is that called "Consumption." We beg their undivided attention while we describe its causes, and effects upon the system, so that they may not only understand their operation, but understand, also, the reasons for the use of the remedies recommended.

Unfortunately for mankind, not only the people at large, but many practitioners of medicine also, have been induced to look upon different diseases as schoolboys in many of the common schools have been taught to look upon the different rules in arithmetic, as things entirely disconnected with each other, instead of being taught that all the higher rules are but modifications of, and changes in, the use of the four elementary rules of addition, subtraction, multiplication, and division. So it is with different diseases in the human system, all of them being nothing more than the effects of the violated laws of the animal economy—

laws which, when carried fully out, give life and healthy action to the organs of the system.

We have heretofore described the circulation of the blood in the human system; the causes of its decarbonization, and the source of its heat; the increase of excitability, or the power of being acted upon by stimuli in the organs of the system; and we have stated that the cause and nature of inflammation in any part of the system arise from the fact, that the arteries in every part are invariably accompanied by nerves of sensation, but that the veins are not. Consequently, whenever a cause of irritation of any kind acts upon any part of the system, the seat of sensation, the brain, is immediately apprised of it through the nerve, and an increased quantity of blood, and of course of heat, is sent along the artery to the spot, whilst the veins, not having any such nerve, and being wholly dependent, for the motion of the blood going on in them, upon the suction or drawing power of the auricle of the heart, have no sensation, nor take on any increased action to carry away the increased quantity of blood and heat brought there by the artery. An increase therefore of both blood and heat takes place at and around the point of irritation, which is called inflammation.

The lungs, it must be remembered, have two kinds of blood circulating in them; and have, of course, two sources of heat. First, the blood of a branch of the aorta (the long circulation), which circulates in the lungs for their nourishment and warmth, as with all other organs of the system; and, secondly, the circulation through them of all the blood of the system, for the purposes of decarbonizing and heating it (by the pulmonary artery and veins), the short circulation, which heat must necessarily be partly communicated to the substance of the lungs.

The lungs, it must be remembered also, are surrounded by the ribs and a wall of flesh, which prevent their heat from passing off by the simple process of exhalation. The heat of the blood is carried off by the secretions and excretions. But this only applies to the heat of, and to the secretions and excretions which take place from, the blood of the long circulation (by the

aorta), and not to the heat of the blood in the lungs, generated there by breathing, there being no such secretions and excretions taking place in them.

Thus we see that, although heat accumulates in the lungs from two sources, it cannot be carried off from them by ordinary exhalation ; nor directly, by the secretions and excretions, as it is from the organs whose heat is wholly derived from the blood of the long circulation.

The lungs, therefore, although they may become overheated, and inflamed, and although that heat and inflammation will excite them into quicker action, and cause them to breathe faster, and of course to generate heat faster, yet they have fewer channels by which they can be relieved of heat than any other organs of the system. In fact, there are but two channels through which heat can escape from the lungs, viz., by its passing with the blood to the heart, and thence over the system, and by its passing into the air-cells of the lungs with the aqueous vapor, and then off at each expiration of the breath.

There has been heretofore so little known of the effects of breathing upon the blood, and so little application made of what was known to the elucidation of derangements of action in the system, popularly called diseases, and particularly of such as are the effects of the generation of too much heat in the blood of the lungs, that both the members of the medical profession and the people at large, have quietly and hopelessly submitted to erroneous opinions and practices, both by the regular members of the profession, and by quacks and empirics, until derangements of the action of the system from this cause produce the deaths of more people at the present day (which will be seen by looking over the bills of mortality of the towns and cities) than almost all other diseases put together.

Is it not, then, high time, we seriously ask our readers, that something should be done to enlighten the minds of the people, and to arrest this increasing cause of destruction of the human race, too generally of the youngest, fairest, and brightest of them ?

Unfortunately, the people have been taught to look upon fever and inflammation as mysterious things, which can neither be understood nor satisfactorily accounted for. Some have been taught to believe that the lungs exert some influence upon the blood besides that of exposing it, under the most favorable circumstances, through their fine tissues, to the chemical action of the air.

But these errors, which serve to prevent the formation of correct opinions as to the true nature of deranged action in the system, can be easily disproved, as every person who has studied these subjects for himself must have observed, that unless the blood has failed, from some cause, of being decarbonized to the healthy standard, and there is an obstruction of perspiration, or some other of the secretions, which will permit an accumulation of heat in the blood, and also an increased number of breathings to produce that heat, there can be no fever. Nor can there be any such thing as local inflammation, where the nerve of sensation has been divided, or where there is no accumulation of blood nor of heat. It will be observed also, that when fresh and warm blood is exposed to the action of the air, whether it be on the ground, from a slaughtered animal, or in a bowl, at the bedside of a patient,—whether it be under the cuticle which covers the lips, the cheeks, or any other part, where the cuticle is equally as thin, and the part equally exposed,—the same process will go on, viz., the oxygen of the air will unite with the iron, and with a portion of the carbon of the blood, the blood will change to a lighter red color, carbonic acid gas will be formed and given out, and heat will be evolved.

These are the effects of the laws of nature; and as heat is evolved in the lungs of a human being by breathing, it must pass off down to the temperature of 98° , or else, by other fixed laws, deranged action in the heart and arteries, and deranged secretions and excretions, must take place.

We have shown, we hope, enough to satisfy the minds of our readers, that the secretion of matter in boils, abscesses, and the pustules of smallpox, takes place in order to carry off the heat of the blood, and to reduce the action of the heart and arteries to

the healthy standard of both ; and that the quantity of matter secreted in these several ways would be, were nature left to the government of its own laws, just in proportion to the purity of the blood, and to the quantity of heat which was in it above that standard.

And we can say here with undoubting confidence in the truth of the assertion—for it has been supported by many years' successful practice—that the same laws which govern in smallpox, in boils and abscesses, govern in the secretion of matter in the lungs in the disease called “consumption”; and that if the same means were used to abstract the superabundant heat of the blood in consumption which are used to abstract it in smallpox, the same good results would follow.

In the preparation for smallpox, every kind of covering calculated to retain heat in the blood is removed from the body of the patient ; the diet is of the blandest and least stimulating kind ; the patient is kept in a cool room, and with as little clothing as possible ; no feather-bed, nor even a woollen blanket, is allowed, while at the same time cooling purgatives are used to remove, by the secretions and excretions, all internal heat above the healthy point, and all causes of irritation. If these means are not enough, the free use of cold water is resorted to, to carry off all inflammation, and all heat above the healthy standard. We ask, For what is all this done, but to prevent the necessity arising in the system of so much matter being formed to carry off this inflammation and heat? This practice in smallpox has been found successful, while the use of all heating remedies have been abandoned by the members of the allopathic school of medicine.

Now, if we compare this certain practice in smallpox with what is done by the members of the same school at the present day, for the diseases of “consumption of the lungs,” “bronchitis,” or “consumption of the throat,” etc., we shall find, that although the object is, or should be, the same with the practitioner in all of them—that is, to prevent a necessity for the formation of so much matter or pus to carry off the heat of the blood to 98°—the members of this school seem to have reversed that object, and to

try, by the use of warm rooms, flannels, etc., to cause a necessity for the formation of as much pus, or matter, as possible, and thus revive the old but exploded idea which once existed in the minds of practitioners, as to the cure of smallpox, "that this filthy matter has to be expelled from the body before the disease could be cured"—an idea which was fatal to thousands in smallpox, and which is now being fatal to tens of thousands in consumption.

In the commencement of consumption, it is generally called a "bad cold," and unfortunately the people have been taught to believe that it is in some way caused by cold being fixed in the body. What seems to give confirmation to this belief is the fact, that the patient complains of chilliness throughout its whole course. This sensation does not proceed from a lack of heat in the body, but, on the contrary, from there being too much of it, which causes the power of feeling in the nerves of sensation to be worn down and exhausted, and the sensation of chilliness is the consequence.

If it were possible to raise the temperature of the blood to 200°, the sensation of chilliness would soon return, because the excitability of the nerves necessary to the sensation of warmth would soon be exhausted. The truth of these remarks is proved in every case of consumption which is treated in the ordinary way, by flannels, etc. For, the necessity of increasing the quantity of them, and of other nonconductors of heat, and the warmth of the room in which the patient is confined, keeps pace with the advance of the disease. If other proof is yet wanted to establish the truth of the above-mentioned positions, it can be found in the fact that, if the patient will resort to the same means which are resorted to in smallpox, to abstract the accumulated heat in his blood in either of these diseases, he will not only find that the sensations of coldness and chilliness are soon removed, but he will find also that matter, such as is spit up from the lungs and throat in these diseases, (and which unfortunately the people have been taught to believe must form and be discharged, which is only true whilst the heat of the blood is kept up above the healthy point), cannot, and will not form; nor will there be any necessity for its doing so, after this heat is carried off, any more than there is a necessity for

a great number of pustules forming and filling in smallpox, where the heat of the blood is kept down to the healthy point.

The author will here close his argument upon the nature and causes of these derangements of the action of the system from the healthy state, with a general statement of his experience in practice upon them. And, in doing so, he will declare, upon the honor of a man who cannot expect to live much longer, as he is the last of his family, and has already lived to an age much older than any of them, and who has no other object in view, but the preservation of the lives, comfort, and health of his fellow-creatures, that he will state nothing but what is true and may be relied upon.

In the early part of his practice, he thought of and practised upon these diseases as others of the allopathic school. He recommended the use of flannels, warm rooms, expectorants, opiates, etc., and inculcated the danger of "catching cold." He but seldom gave any relief, and, when any was given, it was temporary. He had come to the mortifying conclusion, with others, that these diseases depended upon mysterious causes which could neither be understood nor accounted for. But since he has been induced, by the causes above mentioned, to abandon all the hypotheses of the schools of medicine, as to the nature of what are called "bad colds" and other diseases, their powers, etc., and has studied the healing art entirely disconnected from these hypotheses and the professed experience gathered therefrom, but as wholly dependent upon the anatomical structure of the human body, the agencies which act upon that body both internally and externally, and the laws which govern the actions caused by those agencies (discovered within the last sixty or seventy years), he can say with truth and confidence, that he has never tried, or known others to try, the cooling system, in either of the above states of deranged action, and in very many others, and particularly in that kind of derangement called "galloping consumption," without the patient feeling immediately pleasant and salutary effects.

Thousands of persons, and many of them practitioners of medicine too, are willing to affirm, that they have seen patients, la-

boring under consumption, greatly injured by being exposed for a short time to currents of cold air from doors, windows, etc., from simply crossing cold rooms, getting their feet cold, etc. Misconceptions of the kind, wise, and beneficent laws of the Creator, given for the government of action in the human system, have caused many false theories of the nature of these diseases, and increased the sufferings of millions of the human race.

As soon as a patient (whose nervous excitability, or power of being acted upon by the stimulus of heat, is so much worn down that he can bear it without the action in his blood-vessels being excited to a high degree) is exposed to a current of cool air, or becomes partially cold in any way, the excitability of his nervous system increases rapidly; in fact, so much so, that he scarcely feels the abstraction of heat; and, consequently, as soon as the heat acting upon him is again increased to its usual quantity, and it has this increased quantity of excitability to act upon also, a high state of arterial action must follow, which is called "fever," "bad cold," etc.

Whereas, by the kind and beneficent laws of the Creator, if the cooling process had gone on, and particularly if it had been general over the system, the patient would, instead of being injured, have been greatly benefited. These laws of the animal economy have now been in a course of being tested by the author for the last ten years. He has tested them upon himself, upon his family, and upon hundreds of others, and has never seen any other results but the most happy and agreeable ones.

We here mention a case of "bronchitis" or "consumption of the throat," in which this disease (as it is called) had all the advantages of a proper constitution for it to work upon (the mother and elder sister both having fallen victims to the same kind of derangement in the action of their systems), and strong prejudice in the minds of the ruling members of the family in favor of the flannel and heating practice of the members of the allopathic school, yet the life and health of this interesting patient were saved in rather a remarkable manner by the cooling system of practice.

A beautiful young lady, of about 18 years of age, "caught

a violent cold" whilst travelling from the city of Washington to Norfolk, Va. On her arrival at Norfolk, she had lost her voice, had a sore throat, and all the other symptoms of "bad cold," "fever," etc.

She was immediately placed under the care of one or two of the most eminent allopathic physicians of the city, who continued to prescribe for her for about six months. She was then pronounced to be in a deep decline, and of course must go as her mother and sister had gone before her. She was then removed to Portsmouth, where her family resided, and placed under the treatment of an old and eminent surgeon in the navy of the United States, who continued to practice on her for many months, and finally pronounced her case hopeless. While she was under the care of this surgeon she often visited at the house of the author of this work, from a feeling of intimacy and friendship with his wife. During these visits her low and suffering condition was frequently the subject of conversation with us; and we frequently expressed our decided belief, that the flannels she wore, and the close and hot rooms she slept in, were the causes of all her sufferings. To these remarks she many times replied, that if she could have her own way, she would soon get rid of them. At last, she was given up by her attending physician as beyond the reach of medicine. She had now become so low, that it was with difficulty she could walk the short distance that separated our dwellings. In a short time after the last physician had stopped prescribing for her, she was evidently much relieved from some cause; in fact, so much so, that it excited our surprise, and upon my wife's asking the cause of it, she frankly told her that, after the last physician had ceased to prescribe for her, she had, without the knowledge of her family, taken off all her flannel, and that to that cause she attributed her partial recovery.

Things went on in this way for some time, until, one Sunday evening, she sat with my wife until quite late, at the window, through which the cool air circulated quite freely; at last she rose to go home, and, as she did so, observed,—“O how I hate to go home to sleep in that warm room!” We had observed that,

while she sat at the window, her voice was as clear, and her articulation as distinct, as ever it had been even in health.

Soon after breakfast the next morning, she returned to our house, and such a change had taken place, both in her health and appearance, as I had never witnessed before. She evidently had been crying considerably, and remarked that she could not help shedding tears, when she thought of her suffering and helpless condition, and emphatically asked me what she should do. She was now extremely weak; it was with difficulty she could breathe; her throat was sore, and pained her very much; her voice was now reduced to an indistinct whisper, and her countenance was swollen, yellow, and feverish. After reflecting for a few moments, I remarked to her, "Miss——, I confidently believe that your recovery, or your death, in a short time, depends entirely on the strength of your own resolution, and that your present distressed condition has arisen entirely from your sleeping in a hot room and under too much bedclothing, after sitting at the cool window so long last evening." To which she quickly replied, as well as she could; "O, tell me what to do, and I will do it!" I then said to her, "You have told us, that you have taken off your flannels and other thick clothing without the knowledge of your family, and that you were benefited by it at the time; and you told us, just now, that your father and mother-in-law had left home, or were going to leave for the rest of this day. It is my confident belief that, if you will return home and lock yourself in your own room, so that you will not be disturbed, then dress yourself as thinly as possible, and bathe yourself, particularly your chest and neck, freely in cold water every 20 or 30 minutes, (don't be afraid of it,) and do not even lie on a feather-bed, which will prevent the heat from passing freely from your system; and continue this course until you feel (as surely you will) that all unnecessary heat has passed from your blood; then dress yourself in as thin clothing as you can, and remain the rest of the evening as quiet as possible; and be sure that you sleep in a cool room to-night, and with as little covering as possible, to-morrow morning, if you will come to

see us, and you are not greatly relieved, in fact; comparatively well to what you are now, I shall acknowledge myself more mistaken than I ever have been before. The next morning, sure enough, she returned, and it was truly a pleasure to look at and hear her. Her countenance was radiant with delight and hope. She was now without fever, the soreness of her throat was gone, and her voice was clear. We now told her, that she must see that her life depended upon her own conduct, and that too much heat in her blood was the cause of all her sufferings.

In a few days after the above-stated circumstances took place, a secret was made known to some friends, that Miss — was to be married in a few weeks to an amiable gentleman to whom she had been affianced for two or three years, but the wedding had been postponed on account of her ill state of health. The cooling treatment was continued, the wedding took place at the time appointed, and the happy pair started for a pleasure trip to some of the northern cities, where they remained five or six weeks. Soon after their return, in a conversation with the gentleman, he told us that several times his young wife had carried the cooling system so far as really to frighten him; that if ever she felt anything like a bad cold, hoarseness, or sore throat, cold water and other means of cooling herself were immediately resorted to, and with uniform success. From that time to the present, now some two years, she has enjoyed good health.

Here is a statement made to us a few days ago by a gentleman who stands deservedly high in the legal profession, as to his own case of consumption of the lungs. This gentleman was almost an entire stranger to us, and knew nothing of our peculiar views as to these derangements, their causes, etc. He said that he had been but a short time a resident of the city of New-Orleans when he was taken with the ordinary symptoms of "a bad cold," but which soon changed to consumption of the lungs; that the two physicians who attended him were gentlemen of high standing in their profession, but that they soon gave his case up as a hopeless one.

At that time he was not only clothed in the usual quantity of

flannel, shirt, drawers, etc., but he had on also two flannel gowns, one of which the physicians, in their extreme caution, would not permit to be lined with silk. "I believe," said he, "at that time, I spit up daily a hatful of matter." He had a desire to visit the island of Cuba; but, when it was expressed, one or both of the physicians objected, simply because they did not believe he would live to get there. When at last he was carried to the vessel in the arms of some men, the captain refused, at first, to take him on board, confidently believing that he would die, and have to be buried at sea. But the friend who first persuaded our informant to reside in New-Orleans finally induced the captain to take him on board. After being in the cabin a short time, he found that it was so extremely warm and close that he could not bear it, and, after first getting rid of his flannel gowns, etc., he had to beg to be carried on deck. As soon as he was thus exposed to the cool air, he found that his strength was invigorated, and the matter thrown up was less in quantity. Encouraged by this increase of strength, on going again into the cabin for the night, he took off all his flannel and put on linen. The next morning, he was taken on deck in his linen clothes; he soon found that his strength was still more increased, and that the quantity of matter spit up was much lessened. "In fact," said he, "when we arrived at Havana, I was able to walk the deck alone, and, on going into the city, I had suits of clothing made entirely of linen, which I wore during the whole time of my stay there. My appetite was good; my strength returned rapidly; my cough and expectoration of matter in a short time ceased altogether, and I was a well man."

Let it not be supposed that we mean to infer, by stating the two cases above, that the simple acts of taking off the patients' flannel, and having them bathed in cold water, thereby taking out the excess of heat in their blood above the healthy standard of 98° , is everything the physician can do, or ought to be done, in all cases of consumption. But we do mean to assert that, until this excess of heat is carried off from the blood, neither the attending physician, nor any one else, can form a correct opinion

of the true state of the patient. This excess of heat in the blood excites the action of the heart and arteries into an unhealthy state, and the pulse in such cases is no guide to assist in the formation of a correct opinion as to the true state of the system. It may cause an obstinate diarrhoea to exist, or the bowels to be permanently constipated; it may cause in the pulse a seeming indication of the existence of inflammation in the system, when in truth there is already too much debility; or it may cause in the pulse the appearance of great debility in the action of the system, when, in truth, some of its organs are in the state of active inflammation. In fact, this excess of heat in the blood has been the cause of deluding physicians into erroneous practice on these derangements of action called "consumption," and the great cause of their mortality.

The experience of the author, in taking this excess of heat from the blood by the removal of flannel and other clothing, which are non-conductors of heat (from being in contact with the skin), by bathing the patient, or sponging him with cold water, has been extensive, and he can affirm that he has never seen any injurious consequences result from it; but he has known it to put a stop to weakening discharges from the bowels, after astringent remedies had failed; and, on the contrary, to cause the bowels to become open and regular, after long states of constipation, which purgative medicines had failed to relieve. But, above all, its most important effect is, to bring the pulse to be once more the true exponent of the state of action going on in the system. We cannot help remarking here that if the people could be induced to acquire for themselves a perfect knowledge of the source of heat to the blood, of its great importance to life when in due quantity in the blood, and of its injurious effects to that life when in excess (which they could do by a few hours' study), such knowledge would add more to their health, prosperity, and happiness, than any other knowledge they could gain at the present day. For, without this knowledge, all diseases must ever remain mysteries, and the people themselves subject to be imposed upon by every designing quack. Whereas, if they have

this knowledge, all derangements of action in their systems would at once be understood as consequences of violations of the laws of health, which could generally be remedied before any serious consequences.

We bring our remarks upon consumption to a close, by giving a short statement of a case which ended most fatally—the effect of ignorance (both on the part of the patient and that of her well-meaning neighbors) of the laws of the animal economy.

A Mrs. M., who was a poor woman, and compelled to work for her own support (her employment generally was mending shoes), had been laboring under consumption of the lungs for several years, and was supposed, by all who knew her, to be in its last stage. She was as much reduced in flesh as she well could be, and it was with difficulty she could walk across the floor, and the cough was so distressing, although she spit up large quantities of matter, that her eyes would sometimes seem as if they would burst from their sockets. This extremely distressing cough, we found out in the course of our attendance on her, was partly attributable to an elongation of the pendulous palate, which being partly removed, the cough was not so very distressing. She was in the above-described situation when we were requested to call and see her. After some conversation, we looked upon her case as perfectly hopeless; but as her pulse was still strong and irritable, we concluded that it was possible she might be somewhat relieved; or, at least, that her sufferings might be somewhat mitigated. In the course of our conversation we discovered that she had, next her skin, the thickest flannel we had ever seen, and which was double across her chest. We then told her that we looked upon her case as almost hopeless; but if she would comply with our directions, to throw off directly all flannel clothing next her skin, woollen socks, etc., and daily sponge herself freely with cold water, particularly about the neck, chest, etc., we would not only attend her, but do everything which we believed would be of service to her. At first, she seemed quite alarmed at the probability of taking cold, but, upon our assurance that she would not, and that she might keep her room as warm

as she pleased, which would not prevent the excess of heat in her blood from passing off, she agreed to perform to the letter what we had advised, and this promise she fairly performed. We then gave her some little anodyne medicine to be taken after going to bed, and left her.

The next day, when going to see her, we expected to find her with her skin somewhat cooled, but her pulse tense, and indicating inflammation. To our great surprise, her skin was cool and her pulse extremely soft and weak, evidently showing that the heat retained in her blood above the healthy point, by the flannel clothing, had been the whole cause of her suffering. The only question now to be decided upon was, whether her lungs, which were so much injured, could ever restore themselves to a sound and healthy state, and at the same time perform their proper functions to the rest of the system; but this question could only be decided by time. Instead of cooling medicines, as we had expected, we gave her quinine in vinegar, mixed with a few drops of laudanum. What is remarkable, this medicine was kept up for eighteen months. It was in August that we commenced attending her, and in February of the second year, we called upon her, after being absent for some weeks in the South. She was greatly pleased to see us, and exulted very much in the flesh and strength she had gained; showed us her arms particularly, and said that she was now not only able to mend shoes, but could do almost anything about the lot, such as sawing her own wood, etc.

Just as we were about to leave, she remarked, "Doctor, I am so much better, and the weather is so cold, do you think it will do me any harm to put on my flannel again? My neighbors tell me I shall catch my death with cold." To which we replied, "Yes, madam, your flesh is new, and your system has more blood in it than it has had for years past. But if, by the use of flannel, you retain too much heat in it, it will kill you as sure as you are now recovering your health." Not thinking that she would venture to put on the flannel again without our consent, we left her with that single remark. About ten days from

that time, her little son came for me, saying that his mother was dying.

On getting to her, we found that a blood-vessel was ruptured, and that she had been bleeding profusely from the lungs. But after giving her some medicine, the hemorrhage ceased, and she passed a tolerably good night. Early the next morning we visited her again, and found her apparently still better. We now ventured to ask her what she supposed was the cause of the bleeding (as we as yet did not suspect the real cause), to which she replied that she believed it was caused by her exerting herself too much in getting off the hoops around a bale of hay for her cow. The same day her son came for us again, and, almost immediately visiting her, such a scene as met our view we hope never to see again. She was lying on her bed, entirely dead. There was an ordinary wash-basin on the bed, about half full of blood; the bed and bed-clothing were almost covered with blood, and a considerable quantity of it on the floor; so that we supposed she must have lost at least a gallon before she expired. From her exposed situation, it was now easy to see what had been the real cause of this great discharge of blood. She had yielded to the persuasion of her ignorant neighbors, and perhaps to her own feelings of coldness, from not having a proper supply of warm outside clothing, and had again put on that same double-breasted flannel which had previously caused her so much suffering, and now her death.

The pain and mortification produced in our minds at witnessing this undeniable evidence of the dreadful effects brought about upon this unfortunate woman by ignorance of those laws of nature which govern healthy action in the human system, was great indeed. We could do nothing but make a note of the circumstance, and resolve to publish it to the world in the hope of warning others. Yet we very much fear that such facts will have their due weight upon the public mind, so strong is the prejudice of the people in favor of the belief that there is a thing called "consumption" which can attack the human system at its will and pleasure, and which is uncontrollable by the efforts of

man. It is next to impossible to lead persons generally to comprehend the difference between heat itself, as a material and substantive thing, and the sensation of heat or warmth produced by the action of material heat upon the nervous system of the living body.

But we venture the assertion that, so soon as the people have acquired a knowledge of the source of the material of heat to the blood, and the proper quantity necessary to produce the healthy development of the organs of the body, and gained a clear and proper idea of the difference between the material of heat, the sensation of warmth it produces, and the cause of that sensation, just so soon will they look upon the derangement of action in the system, called "consumption," as consequences, in a great measure, of the advancement of civilization and luxury, by causing too much of the material of heat to be confined in the blood, by the use of such clothes as are non-conductors of heat, whilst, at the same time, the nervous power which should give the sensation of heat or warmth is thereby exhausted; thus violating the laws given by a wise and good Creator, when he first spoke man into existence. This knowledge being diffused, it will prevent the accumulation of heat above the healthy standard as far as possible, and when it does so accumulate, it will be removed in the most convenient way. The disease called "consumption" will then cease to destroy, as it does now in all civilized countries, nearly one-fourth of their inhabitants. And it will cease to be, what it is now, a reproach to the practice of the healing art.

SCARLET FEVER, PUTRID SORE THROAT, ETC.

If ever there has been an unmitigated evil inflicted upon the family of man, it has been by the schools of medicine in their theory and practice of these diseases.

In the first place, the people are taught a false philosophy, which keeps them in ignorance of the real laws of nature. A belief is promulgated that the merciful Creator visits His crea-

tures, and particularly the younger portion of them, with "diseases" as so many scourges to punish and destroy. In this way doubts are created, with some, as to the goodness, mercy, and justice of Him who made them; with others a feeling of hopeless resignation to a destiny which they cannot avert; and with all, that the nature, causes, and power of these diseases are beyond the reach of human knowledge, and can be in no other way understood than by watching the progress of and combining what are called their "symptoms," as they develop themselves, thus determining the name, power, and character.

In the second place, the schools of medicine teach the people, that the name of the disease under which a patient is suffering being determined upon, its "cure" is to be attempted by the use of such remedies (whether internally or externally applied) as may have proved beneficial when used before by the same practitioner, or some one else, in cases similar, or supposed to be so, to the one for which they are to be given. And it is not unfrequently the case, that these remedies are used under the belief that they produce specific effects upon the disease itself, wholly independent of any effects they produce upon the actions going on in the organs of the system. Such effects are, therefore, to be looked upon as extra scientific, beyond the reach of human reason, but are to be taken upon trust, and believed. This is what is called experience in the practice of the healing art at the present day; and, in truth, we have only to give our confidence to this professed experience to be prepared to be imposed upon by every impostor, who may be disposed to compound medicines, to give them imposing names, and to manufacture certificates for them.

Such is the present state of belief, both with the people and with many practitioners of medicine, who profess to be guided by the teaching of the schools, as to the nature of diseases and their cure; particularly so as to those which head this article. But if we are to judge of the correctness and propriety of these beliefs and practices by the results they produce, we must come to the conclusion, that there is an awful amount of responsibility resting somewhere, for the great destruction of life which takes place an-

nually among the younger portion of the human race. It is known to be a fact that, of the number of perfect and healthy children born in countries where these beliefs and practices prevail, not more than one-half reach puberty.

If a farmer loses, by disease, one of his calves or pigs, both his neighbors and himself immediately conclude that there has been bad management somewhere. But if he loses five out of ten of his children, his neighbors and himself conclude, that those hydra-headed things called "diseases" have been permitted by Providence to attack and destroy his children at their will and pleasure. Often can he apply the language of the poet who bewailed the death of his own children :

..... "Insatiate archer ! could not one suffice ?
Thrice hast thou drawn thy shaft, and thrice my peace destroyed."

By way of testing, as far as we can, the truth or fallacy of the above views as to the nature of diseases, their prevention and cure, particularly scarlet fever and putrid sore throat ; and by way of comparing the habits and practices of mothers and nurses with the laws of the animal economy, which are unalterable, and cannot be violated without interrupting the healthful actions of the system, let us suppose two mothers, in exactly similar circumstances, with the single exception that one of them has imbibed the doctrines of the allopathic schools. They have each a child in that state which generates scarlet fever etc. After these children have fatigued and over-heated themselves, they fall asleep in some cool place, from which they are, after a while, aroused to be put to bed ; but, from previous habits of indulgence, are allowed, in a half-way state between sleeping and waking, to have their supper first, and are then carried into a warm room, put into bed, and covered up with a large quantity of clothing.

Having fallen asleep in cool places, a portion of the heat was abstracted from the surfaces of their bodies, and had permitted the excitability, or power of being acted upon by the stimulus of heat, to be increased on those surfaces. This previous cooling

induces the children to lie quiet, and perhaps to fall asleep, under any amount of clothing.

Now the process of breathing continues to generate heat in the blood, but by reason of the quantity and quality of the bed-clothing, it cannot pass off from the body by exhalation; and, in consequence of their blood not being properly decarbonized, of the increased excitability of the surfaces of their bodies, of their stomachs being overloaded with food which they did not require, the pores on the surfaces of the bodies of these children fail to be relaxed, and perspiration and the other secretions and excretions do not take place, in order to carry off the heat in this way also. The heat, therefore, generated by breathing accumulates rapidly in the blood, while, at the same time, the heat thus retained acts upon the heart, arteries, and lungs, stimulating them into more rapid action, and increasing its own more rapid production.

The first effect of this accumulation of heat in the children is to make them restless; the second, to put a stop to the healthful process of digestion, and to bring on that of fermentation in the contents of their stomachs, adding another source of great irritation to their already excited systems. After a little while, the children start up from disturbed slumbers, and their mothers discover that they are restless, that their skins are hot and dry, and their pulse quick and frequent, indicating fever.

The mother who has imbibed the doctrines of the schools and the prejudices of the day, supposes that her child has, by some unaccountable means, "caught a cold," however warm the weather and the room may be in which it is placed; and however great the quantity of clothing under which it has been lying. She concludes that this cold must be driven out of her child's system by more heat, and accordingly more clothing is put on its bed. Every time the poor little sufferer, in its agony, throws it off, it is again put back with additional care to keep it there, little thinking that if she could borrow the most ingenious contrivance of the Spanish Inquisition, and apply it to her child, she would substitute a less certain means of its destruction.

After a while this anxious mother discovers that her child has

some distress of its stomach, pain in its head, shivering, etc., and begins to apprehend that one or the other of the above-named diseases is about to attack her unfortunate child, and her efforts are redoubled to avert it. Perhaps the child is put wholly or in part in a warm bath, and the mother, still believing that cold is the whole cause of her child's indisposition, now gives it some stimulating remedy, in the vain hope of producing perspiration. In a little while after taking this medicine, the child perhaps sinks into a troubled sleep from exhaustion, and the mother consoles herself for an hour or two, with the hope that it is better; but it again starts up with all the symptoms of deranged action greatly increased. There is now a languor of the whole system—the eyes are weak, the voice is harsh, the lining membrane of the throat of a deep red color, the color of the face a compound of red, white, and yellow, and that of the whole body of a changeable and uncertain color.

Let us here inquire, What is in truth the situation of this unfortunate child? We have before stated that life in an organized body is action; that that life or action is all that prevents the solids and fluids from yielding to the laws of fermentation and decay, and that in proportion as that action or life is deranged and as the quantity of heat is increased above the healthful temperature, so do the solids and fluids yield to the laws of fermentation and decay.

The matters in this child's stomach are already in the state of fermentation, are acting upon the solids and fluids, and upon the lining membrane of the throat, to bring them into the same state, causing the appearance of what is called putridity in the throat, while the weakened state of action, or life in the system, and the increased heat of the solids and fluids, are giving the same tendency to all the matters of which the body is composed.

This is the dreadful disease called "scarlet fever," or "cynanche maligna," "putrid sore throat," etc., of which so many children have died, and which has caused to mothers so much distress and alarm in all ages of the world. At the last-mentioned state of the disease, the doctor is generally sent for; and, after

many questions and observations, generally ventures the cautious opinion that the child has in some way or other caught the "scarlet fever," or the "cynanche maligna," "putrid sore throat;" that it requires much judgment to decide which it is, as yet, although much depends upon a correct judgment being formed, upon good nursing, etc. These observations, or some similar to these, are often made, although the doctor must know, if he be at all informed upon the subject, that whether the cases be called by one name or the other, it will make but little difference in the course to be pursued.

This mother now congratulates herself upon her early suspicions of the approach of the dreadful disease, and feels satisfied that she has done every thing which caution and prudence could dictate to avert it; but if it must come, and her child must be taken from her, it is the will of Providence, and it is her duty to submit to its decrees.

But with the other child, whose mother had made herself acquainted with the simple and plain, but unalterable laws of the animal economy, given by a kind and beneficent Creator to govern the actions of life and health in the human body, this dreadful "disease," as it is called, goes on differently. This mother knows what life in an organized body is, and what constitutes healthy action in her child. She is aware that all heat in its blood is derived from the air by breathing; that the more her child is irritated the faster it breathes, and the faster it breathes the more heat is generated in the blood; that the more heat the child generates the faster it must breathe; that, in this way, an effect becomes a cause, and a cause an effect again; and so on, until the very deranged state of action in the system of the child is brought about. She knows also that, as soon as the heat in the blood of her child rises higher than 98° , the functions of the organs of its system will surely become deranged thereby; that the process of digestion and assimilation of the food in its stomach will certainly stop, and fermentation and putrefaction commence; that the secretions and excretions of the system cannot go on healthily; that an overfulness of the blood-

vessels must be the consequence of this derangement of the secretions and excretions ; that the heat of the whole system must rapidly increase ; and consequently the action of its heart, arteries and lungs, must become accelerated thereby, until all healthy action is changed into deranged, or, as it is called, " diseased " action.

As soon, therefore, as this mother discovers that, by inadvertence to the warmth of the room, or to the quantity of bedclothing put upon her child, the heat of its body had been raised too high, which would be indicated by its restlessness, by the quickness of its pulse, and the increased warmth of its skin, she comes to the rational conclusion that, unless this increased heat is immediately carried off, the healthy actions of the organs of her child's system must soon become deranged, and what is called " disease " follow. The means she uses to carry off this heat are plain and simple, but sure in their effects. The first is to remove all covering, so that the heat of her child's body might pass off by radiation and evaporation as easily as possible, and then to moisten its body and limbs with a sponge or soft rag dipped in cold water. This treatment she continues until all heat is removed down to the healthy point, which she finds so pleasant to the child that, in nine cases out of ten, it falls asleep during the operation.

But this intelligent mother is not satisfied with simply lulling her child into temporary repose. She knows that when the heat of its body, both solids and fluids, has once been raised above 98°, and the supply of heat to its blood by breathing is still going on, (and that too by accelerated inspirations and expirations of the lungs), it is not an easy matter to reduce the heat of the whole body to the healthy standard. Of course she repeats the soothing operation occasionally, until all evidence of increasing heat ceases. She knows also that the process of digestion and assimilation cannot go on in the stomach of her child while the temperature of its blood is above the healthy point, and of course that the food swallowed by it the evening before may have fermented, and become a source of irritation, assisting in keeping up the

excited actions in its bloodvessels and lungs. She is aware that medicine should be used as agents, both to promote the healthy actions, and to correct the unhealthy ones in the system, instead of being used, as they are by too many at the present day, as specifics, directed by chance or caprice; or, what is worse, by what is called experience in curing derangements of action (unfortunately for the sick, called "diseases"). By abstracting the excess of heat from the blood of her child she had therefore reduced the action in its bloodvessels, as indicated by the pulse, down to the point (say 12° or 15° of the scale) at which any mild medicine, whether it be Epsom, or Glauber salts, a mixture of either of these with magnesia, etc., or castor oil, will act as a purgative, and carry off the offending matters from the stomach and bowels, promoting healthy secretions and excretions. Having adopted this course of treatment, the heat in her child's blood no longer rises above the healthy point, and the system is restored to its healthy state.

Let us return to the mother and her unfortunate child kept in the warm room, and under bedclothing which had prevented the escape of heat from its body, with the action of its heart and arteries deranged, and the food and other matter in its stomach and bowels thrown into the state of fermentation and putrefaction, instead of going on in the healthful one of digestion and assimilation, all of which puzzles the doctor so much to decide what the child's condition really is.

Here again we must refer our readers to those kind and beneficent laws of the Creator which enable the organs of the system, by perspiration, and the other secretions and excretions, to throw off the excess of heat generated in the blood by rapid breathing, so long as the blood of the individual is properly decarbonized, but which fails to have that effect when the blood is not in the proper state.

To account for the following facts: that all children are not made ill by warm rooms, by an excess of bedclothing, by late suppers, etc.; and that the same children are not made so at all times by these causes; that some children will have from these

causes "scarlet fever" (as it is called), in its mildest form, but others violently; while others again, in the language of the schools of medicine, will be attacked and destroyed in a few days by the dreadful disease called "cynanche maligna," or "putrid sore throat;" and that our readers may have a clear idea of the diseases of "scarlet fever" and "cynanche maligna," we beg them to add to their knowledge of these kind and beneficent laws the knowledge of the fact, that all matters which are themselves in the state of fermentation and putrefaction, when brought into contact with other matters which are capable of taking on that process, will act as a fomile (as yeast does on flour, water, etc.,) and assist the other matter in going into fermentation and putrefaction; and that, although the living fibres of the throat, stomach, and bowels, etc., when in a healthy state of action, are capable of withstanding such influence perfectly, yet not when the blood in them is heated above the healthy point, and are in a deranged and debilitated state.

Now, let us take a brief review of this child's situation. In its excitable state, from having fallen asleep in a cool place, with the perspiration checked upon the surface, with its blood imperfectly decarbonized, it is allowed to fill its stomach with food which it did not require, and is put in a warm room, under a large quantity of clothing. Of course, as soon as it was covered with the clothing, the increased excitability of its nervous system made it highly sensible to the stimulus of heat, and the actions of its heart and arteries increased in proportion. This made the child restless, as perspiration could not take place from the state of its blood, and an attempt followed to relieve itself by throwing off the bedclothes. But although its attentive mother prevented this, she could not prevent every effort to do so, driving the blood still faster through its heart, arteries, and lungs, thereby increasing the number of its breathings and the quantity of heat generated in its blood.

The child's stomach now loses its power of digesting the food which had been taken into it; and the matters of which that food was composed, in their putrefying states, act upon the lining

membranes of the stomach, bowels, and throat, generally producing great debility in the action of the heart and arteries, as shown by a soft and weak state of the pulse. The prostrated state of the child's strength, the red and ulcerated state of its throat, and the blotched appearance of its skin, are consequences of the state of its pulse and stomach. Proof is thus given of the fact, that the life or action which is now going on in the body of the child, is not sufficient to overcome the combined effects of the increased quantity of heat in its blood, and the fermenting and putrefying tendencies of the matters in its stomach; and that, ere long, if these tendencies are not arrested and the powers of life assisted, the whole mass of the solids and fluids of its body must yield to the laws of fermentation and decay, and life become extinct.

From these states of the child's symptom, we think it must be plain to every unprejudiced mind, that there are two causes acting powerfully upon it, viz.: too much heat in its blood, and putrefying matters in its stomach; and that these causes must be removed before anything can be done beneficially. But the orthodox members of the schools of medicine will say,—“We care nothing for the causes which produce this prostration of strength, this redness and ulceration of the throat, and the blotched state of the skin, for we have never been taught anything of the manner by which heat gets into the blood, nor of its effects when there upon the system; nor have we been taught that too much heat in the blood has anything to do with the process of digestion; but we know the name of the disease, and the symptoms which indicate it. We know also what remedies writers and practitioners give their sanction to, to be used for the cure of them. Let us cure them, then, as our predecessors have done; or let the children die under the sanction of their authority, and we shall not be blamed!” Hence, more care is taken to keep the child from “catching cold;” some astringent application is made internally to the throat, and perhaps a dose of calomel is given. The too general result of this practice is known, and, fortunately for practitioners of medicine, that result

is attributed by the people to the obstinacy and malignity of the thing called "disease," and not to any lack of knowledge of the laws of animal life, or of the proper remedies to be used by the practitioner.

In the kind dispensations of an overruling Providence, there are two remedies, which are in fact the only ones of much benefit to children laboring under the disease called "scarlet-fever," or "putrid sore throat," particularly in the latter, since the putrefying tendencies go on faster in the solids and fluids of the body than in the former. If used in time, and in sufficient quantities, they are sure to give the desired relief, and are equally accessible to the poor as to the rich. One of these two remedies is: cold water externally applied, but not in the sparing manner it is sometimes used, by only wetting the face and hands, which sometimes seems to do more harm than good; but with the perfect understanding that the whole body, both solids and fluids, are to be cooled down to the healthy point of 98° , or as near to it as possible. The child being put into a sheet dipped into cold water, and changed as often as is necessary, is the simplest, quickest, and easiest way to gain this desirable end. The other remedy is: the internal use of finely powdered charcoal (fresh-burnt, if it can be had). As much of this remedy should be given, mixed in cold water, as the child can be induced to swallow. As there is neither taste nor smell about it, nor anything offensive to the stomach, it should be mixed with everything the patient swallows. It should also be injected into the bowels, mixed with cold water, in as large quantities as possible. This remedy is the most powerful antiseptic known; its only effect is to arrest the disposition in the contents of the stomach and bowels, and in their surfaces, which come into contact with their contents, to yield to the laws of fermentation and putrefaction from the presence of too much heat. Its use, therefore, should be continued until all symptoms which indicate such a disposition are entirely removed.

As soon as the heat in the patient has been reduced to, or nearly to, the healthy temperature of 98° , and the tendency to

putrefaction arrested by the means pointed out above, the change which will take place in the appearance of the patient will be truly pleasing; and the "disease" (as it is called) will soon become quite different from what it was before. Now, the skin will resume its uniform and natural appearance; the eyes will regain their bright, active, and intelligent looks, and the action in the patient's pulse will become the true index to the state of excitability or disposition to inflammation in the system.

Before the excess of heat was taken out, and the disposition to putrefaction arrested, the pulse was soft, weak, and inactive, and would have become more so and hastened the death of the patient, from the effects of a dose of calomel, or probably any other purgative medicine. But now the pulse will be free and active, and may indicate a necessity for calomel or some other purgative, which can only be properly determined upon by the indication of the pulse at the time.

In truth, all those symptoms, even including the sore throat, which gave the deranged action the name of "scarlet-fever," or "cynanche maligna," or "putrid sore throat," will now be gone, if the heat, etc., has been removed before any disorganization has taken place in the parts affected. If proper means are used in time to prevent the accumulation of heat in the body, these dreadful diseases will not occur at all.

The author here begs of those physicians who really wish to prevent the occurrence of such cases, and to relieve suffering humanity as soon as possible; and of all parents, and others who have the control of children, not to look upon the theory and practice here recommended as hypothetical, nor as simply theoretical, but founded upon the laws of the animal economy, and as having been fully tested and supported in his own practice by a happy experience; for he will assure them by every thing he holds dear and sacred that had it not been so supported, no consideration on earth could have induced him to give it support.

The consumption of oxygen gas in the lungs by the act of breathing is constantly giving heat to the blood. Ninety-eight degrees of heat in the blood causes healthy action to take place

in the heart and arteries, and all the other organs of the system ; but, as we have before explained, any increased quantity of heat in the blood above that degree, will certainly cause what is called “ fever ”—that is, increased action of the lungs, heart, and arteries, a further increase of heat in the blood, and a consequent derangement of action in all the other organs of the system, and of their secretions and excretions. But no increase of heat in the blood, nor derangement of action in the bloodvessels, etc., can take place, as we have before stated ; and as is made evident by the easy flow of perspiration and rapid escape of heat from our bodies, whenever we exert ourselves to an uncommon degree, or are exposed to an uncommon degree of heat, so long as our blood is properly decarbonized. But when our blood is not so decarbonized, and the heat generated by breathing cannot pass off by perspiration and the other secretions easily and freely, then the imperfectly decarbonized state of the blood, the peculiarities of construction of the body, its nervous susceptibilities, an overloaded stomach, and different degrees of exposure of different parts of body, produce their effects upon the organs of the system in different states and degrees of deranged action, or “ diseases,” as they are called, of smallpox, consumption, scarlet fever, etc., as above treated of ; and of different grades of general fever in one person ; of rheumatism in a second, of pleurisy in a third ; diarrhea in a fourth, etc.

“ Intermittent fevers,” “ chronic diseases,” and the effects produced by those remedies which have been found by experience most beneficial in changing diseased into healthy action in the system, are all strong proofs of the truth of the above theory of the causes and nature of deranged action of every kind to which the system is liable. They are proofs also of the conjoint and individual action of the lungs and liver in decarbonizing and otherwise preparing the blood to support the healthy action of the system.

Intermitting fevers and chronic diseases are effects of imperfectly decarbonized and over-heated states of the blood acting upon peculiar organizations, but which are not sufficiently

obstructive to all the organs of secretion and excretion to prevent the occasional or partial passage of the excess of heat from the blood. Hence the intermitting states of the first, and the partial relief of the latter of these states of derangement.

But what goes fully to prove the truth of the above theory is the experience which has been gained by practice in the use of the different classes of remedies to restore deranged action in the system to the healthy state. Purgative medicines act upon the blood, as all practitioners will admit, through the medium of the liver, by promoting the formation of bile, and thereby, as we say, decarbonizing it. It is equally evident, that tonic remedies act upon the blood through the medium of the lungs, and assist in decarbonizing it, by causing more rapid breathing and the conversion of a greater quantity of the carbon of the blood into carbonic acid gas, at the same time imparting a greater quantity of animal heat.

Every person is ready to admit the good effects upon the system of exercise in the open air, but they do so without inquiring at all into the cause of those good effects, and the doctor of medicine satisfies himself by thinking,—“Oh, it acts as a tonic, it braces the system!” (We suppose they mean as an old house is braced.) Exercise of the muscles promotes the circulation of the blood, and the more rapid action of the heart. This of itself would only wear down the strength of the body, but the action of the heart being increased, an increased action of the lungs must follow. And now come the good effects. The more rapidly the lungs act the more the blood is exposed to the oxygen of the air; the purer the air the more oxygen there is, and the more carbon is thrown off in the form of carbonic acid gas, while at the same time the more vital heat is given to the blood, which acts upon the heart, arteries and lungs, keeps up their motions, and reproduces itself. Hence the action of the system is permanently changed and made more vigorous. If it were too low before, it is brought up to the healthy standard and retained there; this is called “tonic,” “bracing,” “doing good,” “curing,” etc. But if the action in the system is too strong

and inflammatory, exercise adds to that inflammatory state, and makes the derangement greater. These are the effects of all remedies called "tonic," whether of exercise, of change of air, or of medicines.

It seems really strange to us, and we presume it does so to others, in these times of truly scientific improvement in all the other branches of human knowledge, but this one of the practice of medicine, that writers on, and practitioners of, medicine should be satisfied with the same opinions, as to the causes and nature of "diseases," as they call them, and with the same opinions and expressions as to the effects of remedies upon those diseases, which were entertained and used some sixty or seventy years ago; and before any improvements had been made in the sciences connected with, and explanatory of, the nature of action in the system, and the effects of remedies upon that action.

At that time, as at the present day, if a physician were sent for to see a patient who was laboring under intermitting fever, he would probably prescribe a dose of calomel or other purgative medicine, and say to his patient, "This is to carry off the bile." If he were sent for to a second patient, who was apparently in nearly the same situation, he would probably prescribe a remedy belonging to the class of tonics, and say to this patient, "This medicine will act as a tonic, and relieve you." If he were sent for to a third patient, similarly situated, he would probably prescribe, first, a purgative to carry off the bile; and then, medicines to act as tonics. Possibly he may have restored all three to health; but what is still more probable, some of them were made worse.

Here we see that the practitioner used medicines which, as far as they have heretofore been understood, have opposite effects upon the system, in order to cure diseases of the same name, and with similar symptoms; and that too seemingly in a promiscuous way, as purgatives act upon the bowels, promote the secretions and excretions, carry off heat, and weaken the patient. To the word "tonic," there has been heretofore no definite meaning attached; but tonics are said to give tone to the system, which,

in a philosophical sense, is hard to understand. The effects generally expected from them are, to strengthen the patient, to keep up the appetite, promote digestion, etc., effects exactly opposite to those of purgatives.

As it has been found out only by experience, that remedies belonging to these two classes of medicines, when properly given, will effect the cure of intermitting fevers; that in some cases purgatives alone are sufficient; in others, tonics alone; but, in others, that both purgatives and tonics are required to change the deranged action of the system, which constitutes intermitting fever, into healthy action, we should not be surprised at the fact occurring often in this practice, which is thus guided by experience alone, that, in some cases, much good is effected, and cures are brought about, but that in some others, much harm is done, when we understand the causes which produce what is called "fever," the different degrees in which those causes may act, the different effects they may produce upon the organs of the system, and the real effects of both purgatives and tonic medicines upon it.

We have said, that the curative powers of both purgative and tonic medicines were discovered from experience alone, and not from any knowledge of their real effects upon the system, nor from any knowledge of the laws of the animal economy, which rendered their effects upon the system necessary; for it must be evident, that if the effects of these remedies were known, the state of the system which rendered them necessary to the system were known; and the laws of the animal economy by which those effects are produced upon the system were also known to the practitioner. Then they would always have been prescribed by him correctly, and the desired effects brought about. They would not have acted, as they now do very often, sometimes producing good results, but as often causing harm.

It is fortunate for practitioners of medicine, but very unfortunate for the people, and for the advancement of the healing art as a science, that the people have, from the influence of many causes, been induced to believe that diseases, as they are called,

are individualities, substantive somethings, which have a will, power, design of their own, and can act upon the people's bodies, either openly and directly, or covertly and insidiously, at their will and pleasure. They scarcely ever therefore attribute the fact of a disease becoming worse to the remedies which have to be given to the patient, but attribute it to the will of the disease, as being obstinate, insidious, malignant, determined to destroy, etc.

It is much easier for the practitioners of medicine to inculcate these erroneous opinions with the people, and to encourage the belief with themselves that the practice of the healing art consists, in the exercise of the experience which has been handed down from generation to generation, and from age to age, by books and oral tradition, from the time of ESCULAPIUS to the present day, than it is to inform them that it essentially depends for success upon a proper knowledge of the human system, both anatomically and physiologically, upon a proper knowledge of the causes of its derangement of action, and also of the effects each remedy used will have upon that system, under the various circumstances in which it is placed.

Under this false view of the subject, persons who have the power of retaining in their memories the names which have been given to deranged states of action, under the general term "diseases," who can remember symptoms which characterize each, the names of some men eminent in the profession of medicine; and the titles and doses of the remedies they used, soon gain a reputation for eminence for themselves, while, in truth, they may know but little, and may never know much that is essentially necessary to make them safe practitioners of the healing art.

There has been much said and written, in the course of the last few years, of the imperfect education of young men when they receive their certificates of graduation to practice medicine; but, in truth, the defect of education does not lie in the quantity, but in the quality, of what they have been taught to study, and its applicability to the object in view.

As, for instance, if a student of medicine could have read at-

tentively, and even committed them to memory, all the books upon diseases and their remedies which have been published since the time of GALEN to the present day; and could have listened as attentively to hundreds of lectures from the desk of colleges, upon the same subjects, he could have learned nothing but the opinions and experience of their authors as to the diseases they had seen and the remedies they had used.

Since the advances which have been made in knowledge in all the other sciences, no person now thinks of following the views and opinions of those who lived and wrote before such advances were made; but it is not so in the schools of medicine; for with them, the older the author, the more confidence there seems to be placed in his opinion. If the practice of medicine be founded upon scientific principles, as all profess to claim that it is, then the experience of the ancients is worth nothing, and the practice of medicine as a science has not advanced.

Ancient practitioners knew that purgative and tonic medicines, when properly given, would generally remove intermitting fevers, etc., although they had no distinct idea as to how tonics acted upon the system, nor could they have any distinct idea of the true nature of the pulse; because they knew nothing of the uses of the lungs, and were but imperfectly acquainted with the anatomy of the whole system. But the student of the present day can know more than the ancients did, unless he takes up his whole time in learning what their opinions were. He can now learn the structure of the whole system, and the real uses of its different organs: the heart, with its auricles, ventricles, valves,* and corresponding arteries and veins; how these organs act; how their actions affect each other; how they are acted upon by the blood, and by animal heat as a stimulant, which the ancients, even down to Dr. CULLEN, could not know. He can thereby understand the actions of the pulse, and its indications, which

* The valves of the heart, which play such an important part in the circulation of the blood, and have such influential effects upon the pulse, were not properly understood until within a few years past.

could not be understood before. He can learn the actions of the lungs in breathing, the composition of the air breathed, how it decarbonizes the blood, gives oxygen to its iron, and all its vital heat. He can learn also that the temperature of the human blood in the healthy state is always or very nearly at 98° , while that of all other animals is at a different temperature in proportion to their breathing, exhaling, and secreting powers, to suit their several necessities; that the secretions, excretions, and exhalations of the organs of the human system are always carrying off the heat generated in the blood by the decomposition of atmospheric air in the lungs; and that if, from the rarity or impurity of the air breathed, the blood is not properly decarbonized and its iron oxydized, the secretions and excretions must fail to go on as freely and easily as before, and fail, of course, to carry off the heat of the blood as fast as it is generated by breathing, which must therefore, accumulate in the blood, and excite into more rapid action the heart and arteries, as will be shown in the pulse, both of which constitute what is called "fever." But these all important anatomical and physiological truths were unknown to the ancients, whose opinions, it is expected, the student will spend so much of his time in learning. Nor were they known to Dr. CULLEN when he arranged his classification of diseases, and wrote his treatises on the practice of physic, which is now the text-book of the allopathic schools of medicine, and from which all students of medicine, from that time to this, have to take directly or indirectly their opinions of the nature and causes of fever.

Here we beg our readers to pause a moment and take a fair comparative view of the above plain and simple but scientific description of the causes of deranged action in the system called "fever," with the following quotation from this text-book, giving the learned author's views of the nature of fever. See then if they wonder at all at the fact, that the student of medicine, after he becomes a practitioner, and when prescribing for a fever, should give remedies which sometimes do good, but as often do harm: "Pyrexia, or febrile diseases," says Dr. CULLEN, "are

distinguished by the following appearances: After beginning with some degree of cold shivering, they show some decrease of heat, and an increased frequency of the pulse, with the interruption and disorder of several functions, particularly some diminution of strength in the animal functions.

“These diseases are more particularly called fevers which have the general symptoms of pyrexia, without having along with them any topical affection that is essential and primary, such as the other orders of pyrexia always have.”

“Fevers, as differing in the number and variety of their symptoms, are very properly considered distinct genera and species. But we suppose that there are certain circumstances common to all the diseases comprehended under this order, which are therefore those essentially necessary to, and properly constituting the nature of fever.”

It is evident that the author of this description of fevers, their “distinct genera and species,” mistook the effects for the causes of fever, and hence his different orders, genera, and species. He built up his system upon that mistake. For this mistake he was not blamable, as science had not then advanced sufficiently to show what the true cause of fever is; but this excuse will not exonerate from blame those who at the present day adopt his mistaken views.

There is certainly no other single cause which is now producing so much suffering among the people as this belief of the different orders, genera, and independent states of diseases, thus partially taught in the allopathic schools; and which is fully carried out, both in theory and practice, in the doctrines of the homeopaths. If we believe this doctrine, we study medicine not as a science, but as a collection of facts, handed down from age to age, which are to be impressed upon the tablets of our memory. We are to remember the symptoms which characterize each disease, and the so-called remedies. When, in practice, we have prescribed the most popular remedy for the cure of the disease before us, but it fails, we resort to the next most popular one, and so on, until the patient either dies, or gets well.

If the latter, we say and believe that the remedy has cured the disease, that is, that it has either killed the disease, or driven it out of the patient's system; but if the former, we say it was not our fault, because the disease was too strong, too obstinate, too insidious, or too malignant, for the counteracting affects of the remedies to overcome, etc.

When we understand the true nature and causes of fever, we must know that there can be but one fever, which consists in increased heat in the blood, diminished secretions and excretions, with deranged action in the heart and arteries, either above or below the healthy standard. This is fever, whatever may be the number of names given to distinguish it by; whatever may be the grade of action, either above or below the healthy standard, under which the system labors; or whichever may be the organ of the system mostly affected by it. We must know also that no individual organ of the system can become affected by fever, without the heart and arteries having been first excited by the causes which produce fever; nor can the local fever, in any organ of the system go any higher than just in proportion to the amount of deranged action, either above or below the healthy point, of the general action of the system.

When we know these things, and understand the indications of the pulse, the nature of remedies, and the effects their use will have upon the system in its healthy state, as well as the counteracting influences which an over quantity of heat, and greatly deranged action in the bloodvessels, will have in preventing their effects, we shall be prepared to practise the healing art with success, and to do justice both to ourselves and those who employ us. For we shall understand that the great object in the use of remedies is to bring the temperature of the patient's blood to the healthy degree, the pulse to the proper state of force and frequency, and the secretions and excretions to the proper state. If, by the use of our remedies, we can succeed in doing this, health will as surely return to the patient as light succeeds darkness when the sun rises.

By the laws of nature, which apply as well to the human

body as to anything else, the best means to relieve it of too much heat is by the application of cold. And the only causes which prevent it from having the desired effect in every case are, that it is either not used until after disorganization has taken place in some part, or it is improperly or too sparingly applied.

In the apparently simple act of sponging the body with cold water, or otherwise cooling it by that means, there seems to be no scientific knowledge evolved; there is no mystery about it, nor is there any pay for it. We should not, therefore, be surprised that, as a remedy, its merits have never yet been fairly appreciated.

The question may be asked, Why should the excess of heat in the body, in all cases, be removed by the application of cold, before other remedies are used?

To which we emphatically reply that no person on earth can judge properly of the state of action in the heart and arteries by the pulse so long as these organs are stimulated by this accumulated heat in the blood, as the pulse often changes from soft to hard, or from hard to soft, as soon as this accumulated heat is taken out. Nor do the remedies given have the same certain and definite effects upon the organs of secretion and excretion that they would have had, if this heat had been taken out before they were given. If a dose of calomel, or other purgative medicine, is given while this heat is in the system, it often produces watery evacuations, which only serve to irritate and weaken the patient, without removing the offending cause of the sickness, or in any other way doing good; but, to prevent this effect, the doctor often adds opium to the calomel, and, in this way, more and more complicates the nature of the deranged action of the system, while he adds the danger of the use of calomel as a salivant, all of which might have been obviated by taking out the excess of heat, by sponging the body with a little cold water.

It is a remarkable fact, but nevertheless true, that if a practitioner of the allopathic school has a patient whose brain is inflamed and over-heated, he will not scruple to apply ice in any quantity to his patient's head, and keep it there for any length of

time. But if he has a patient with an inflamed hand, eye, liver, or lungs, or even a little too much heat diffused over his whole system, which is connected by name with some disease nosologically arranged, this practitioner will think it a violation of all the rules of practice, and greatly endanger the life of his patient, to use the same remedy in proportion to the amount of heat accumulated. So much for consistency in practice, and for the use of names for states of deranged action in the human system.

The quantity of suffering, and the number of deaths which occur among the people from these simple laws of the animal economy not being attended to by the practitioners of the allopathic school, nor being taught to the people generally, are beyond all calculation, and call loudly for reform. The people suffer and die, because they have been taught to believe that cases of deranged action in their systems are diseases, and that diseases are things which have to be driven out of their bodies, or otherwise destroyed, by the remedies they take. They pay by the visit those who undertake to drive out, or destroy them, and for the remedies they prescribe, while there is no responsibility attached to error of judgment, mistake, or fraud. Consequently, erroneous dogmas pay better than scientific truths.

Here we declare, without fear of truthful contradiction, that if all those persons who suffer from fever of any kind, who wear flannel next their skins, and suffer from incipient consumption, bronchitis, rheumatism, diarrhea, looseness of the bowels, etc., and particularly those who have worn down their health by study, labor, or exercise of any kind, will lay aside their flannels and their prejudices, and use cold water externally applied, so as to take from their blood all unnecessary heat, the good they will receive will be far beyond their expectations.

But, as we have before explained, it is almost useless to take out this increased heat of the blood by the application of cold in many cases, as it will soon accumulate again, unless we correct as soon as possible the causes of its accumulation: namely, the undecarbonized state of the blood, and the consequent deficient secretions and excretions of the system, which we cannot do un-

derstandingly, unless we have a proper knowledge of the indications of the pulse, of the effects which remedies commonly have upon the system, and a knowledge of the causes which may prevent their having those effects.

The effects which medicines of all the different classes are said to have upon the system, are predicated upon the supposition that the system is, or nearly, at the healthy point, both as regards the temperature of the blood, and as to the state of action in the heart and arteries at the time they are taken.

The belief in the specific operation of medicines, of their acting as purgatives, because they are said to be purgatives; of their acting as tonics, because they are said to be tonics, etc., has caused more disappointments and perplexity to practitioners of medicine, and of suffering and death to patients, than almost any other cause. If, then, the increased heat of the blood, its imperfectly decarbonized state, and the deficient secretions and excretions of the system, produce a state of action in the pulse very much above the healthy state; that is, a strong, depressed, tense or hard pulse, the decarbonization of the blood will have to be effected through the medium of the liver by the use of purgative medicines; but before these purgatives can be made to have their full effect, the temperature of the blood, and the action of the pulse, must be brought as nearly to the healthy point as possible. But, on the other hand, if these cause excess of heat, undecarbonized blood, deficient secretions, etc., produce upon the pulse opposite effects, (the pulse being now soft, weak, and easily stopped, after the excess of heat has been removed by the use of cold,) the decarbonization of the blood and the restoration of the secretions, etc., have to be restored through the medium of the lungs, by the means of what are called tonic medicines. But these tonic medicines can only act as such when they reduce the action, and do as much good in the same time as bleeding, where the quantity of blood taken is governed by a proper knowledge of the pulse, without which knowledge the practitioner, without knowing it, often becomes a murderer.

The observations of the author, since he commenced the

study of medicine, in the year 1811, have induced him to believe with much confidence, that, in a series of years, a change takes place, either in the state of the air, or in the human system, (but much more probably in the air), which, although not regular in its effects, nor affecting all alike, is still progressive for a number of years, producing derangements of the human system more and more inflammatory in their character, until they arrive at their maximum. It then commences changing back again, and gives to cases of deranged action, a lower and lower grade, until they reach their lowest point. These cycles, or periods of return of causes of inflammatory and low states of deranged action have caused great confusion in the practice of medicine, and particularly as to the propriety or impropriety of bleeding, in consequence of the erroneous theory entertained by the allopathic schools. Much suffering and many deaths have been the consequence. In support of this opinion, nine-tenths of the cases of sickness in 1811, and for several years before and after, were highly inflammatory. This state of disease was so common, that bleeding was deemed necessary in almost every case. Nearly every one became a bleeder, and carried his lancet. One of the results of this general practice was, that, while a large majority of the sick were relieved, some were greatly injured, if not killed. But the greatest injury produced by it was, the belief excited in the mind of every body that all deaths resulting from disease, might be prevented by sufficient bleeding. Great changes have taken place since that time in the number of inflammatory diseases, as compared with those of low and weak action; the latter now predominating as much in number as the former did then. Now the doctors of medicine, and the people, look upon bleeding with as much abhorrence as they did then with favor and confidence, as many people suffer and die from not being bled, as did then from being bled improperly. When the causes which produce deranged action in the system shall change again, so as to produce a majority of diseases of high action, then the same course of experimental practice will have to be gone through with again, that the doctors and the people may learn how to treat them

as before. The same amount of suffering, and number of deaths will have to occur, unless both the doctors and the people shall, before that change does take place, learn the true nature and causes of deranged action in the system, and learn also how to judge of it by a proper understanding of the indications of the pulse—the true and unerring guide given to them by their wise and good Creator to teach them how to assist each other whilst under bodily affliction.

The man who can and will induce his fellow-creatures to study and understand the pulse and their indications, will do more to prolong their lives and lessen their sufferings than any other benefactor of his race has ever done before. The people have been taught heretofore, as soon as they became sick, to resort to some remedy, which they believe experience justifies, to cure themselves (as the remedy is said to do). But, without a knowledge of the pulse, they are just as apt to take a remedy which will do harm, as to take one which will do good, except in a few cases, where the pulse is neither affected by the cause of their sickness, nor by the remedy taken.

In all cases where there is real disease, as it is called, the pulse is either stimulated above the healthy point, or it is reduced, either directly, or indirectly below it, which can only be judged of correctly by feeling it. For, however simple the remedy may be which is taken, if it has any effect at all, it will surely cause the action of the heart and arteries to be either higher or lower. If the “disease” (as it is called) has lowered the pulse, and the remedy raises it, then the remedy has done good; but if the remedy lowers the pulse still further, then the patient is sicker than he was before, and he thinks his disease is worse. On the other hand, if the disease has caused the pulse to rise too high, and the remedy lowers it, the patient is sure to be better; but if it raises the pulse still higher, the patient is sure to be worse. By knowing these facts, we can understand the causes of what are termed “obstinate diseases,” “insidious diseases,” etc.

When the causes of sickness (deranged action) raise the pulse a little above the healthy point, and, assisted by the remedies

used, continue to act for a length of time, then the disease is said to be "obstinate," etc. Or, if the cause of the sickness reduces the pulse to a point below the healthy one, and the remedies used help to keep it so, then the disease is said to be "obstinate," etc. Or, in other words, where the sickness causes the pulse to be raised above the healthy point of action, and the doctor prescribes quinine, or other stimulating remedies, and the patient becomes daily worse and worse, all the "worse and worse" is laid to the obstinacy of the disease. Or, if the cause of sickness reduces the pulse below the healthy point, and calomel, salts, castor oil, etc., or other weakening remedies are persisted in, the patient will surely become worse and worse, and here is another obstinate case of disease. If these wrong remedies are persisted in until some of the organs of the system become so much deranged, both in their structure and action, that they cannot restore themselves to their healthy state, then it is said,—“Oh, the disease was determined to kill,” etc.

But the author does not wish to be understood as attributing this lack of knowledge of the true nature of what are called fevers, and of the pulse, to any man or set of men as a fault, or as something which could have been prevented. For every person who has watched the progress of scientific knowledge must know, that, until within a very few years past, the nature and operation of valves acting for purposes of forcing and suction, were not understood; nor was it known that a part of the oxygen of the air unites by the act of breathing with the iron of the blood, and becomes the stimulant to action in the capillaries and smaller veins to make them take in the blood as fast as it is brought to them by the small arteries; and that the oxygen of the air breathed may be deficient in quantity, and cause a lack of energy in the capillaries and small veins to take up the blood as fast as it is brought to them by the arteries, and thereby cause the blood in the large arteries to fill back upon the valve of the right ventricle of the heart, and the great artery (the aorta); which of course must produce fullness and tension in all the arteries, and a backward pressure of the blood upon the valve of the

aorta and ventricle. All this, must, of course, produce great effects upon the pulse, but then it could not have been understood, until the causes were understood.

From this we must see that, until these discoveries were made, as to the effects of oxygen upon the system, and the effects produced by the backward pressure of the blood upon the valve of the great artery, the aorta, it was impossible to understand the causes of deranged action, the indications of the pulse, or the effects upon the pulse, and the system generally, of the remedies used to correct that deranged action or disease, and particularly that of bleeding, of the results of which there have been so many opinions formed both for and against it as a remedy. But when the backward pressure of the blood above spoken of is generally understood, and as it is known to act during the continuance of some states of deranged action, there will be but one opinion as to the necessity of bleeding as a remedy; and there will be but one opinion as to the indispensable necessity of understanding the indications of the pulse—the guide given by Almighty Wisdom to teach us how to assist each other in our bodily afflictions.

Emetic and purgative medicines act upon the nervous power of the stomach and bowels, and by that means weaken the actions of the heart, arteries and lungs. Consequently, while they promote the secretions and excretions, and carry off the heat of the body in that way, they, at the same time, diminish the quantity of heat generated in the blood by breathing. Different medicines act with different powers in these respects, and the same medicine may act differently in different states of the system.

In the whole class of purgative medicines, there is not perhaps one which possesses these powers more fully, and for a greater length of time, than calomel. There is therefore no purgative medicine more to be relied upon, to decarbonize the blood by promoting the secretion of bile by the liver, and to carry off an excess of heat from the body. Hence calomel is looked upon by many practitioners of medicine as almost a specific in cases

of bilious fever. But, with a small quantity of tartar emetic added to a smaller quantity of calomel, all these powers are greatly increased. These medicines, when combined, or even calomel alone, come nearer being a substitute for bleeding, where that remedy cannot conveniently be used, in cases of deranged action in which the pulse is tense, hard, and strong, than any other which can be used. But, in consequence of these very qualities, calomel and tartar-emetic combined cannot be used advantageously where the pulse is not tense and strong; nor can calomel be used alone advantageously, where the pulse is not somewhat stronger and harder than in health. Where the pulse is not higher than in health, and yet a purgative is deemed necessary, one which depresses the pulse less than calomel should be preferred.

In the schools, there are two classes of medicines treated of as stimulants and tonics; but, in truth, there are no such medicines as "tonics," in the sense in which the word is used and understood by many persons. This error has induced thousands to give stimulating medicines, because believed to be specifically tonic in their effects, whereas, if they had known them to be stimulants, they would not have given them at all. Stimulating medicines have three distinguishing characteristics, which should never be lost sight of, and should be known to every body, namely, diffusibility, strength, and permanency.

All medicines taken into the stomach, whether called stimulants or tonics, increase the action of the heart, arteries, and lungs, more or less, and of course promote the decarbonization and heating of the blood; but they act with different degrees of strength, and for different lengths of time, which circumstances are the causes of their distinctions.

To explain the difference between the two kinds of stimulants, and between them and what are called "tonics," let us suppose that the ordinary number of respirations of an individual are twenty in a minute, and that a dose of one kind of stimulating medicine will increase the number to twenty-five, but that a dose of another kind will only increase them to twenty-one.

The medicine causing five additional respirations in a minute will soon cause such an increase of heat in the blood that perspiration must flow freely to carry it off; or else, what is called "fever," must be the consequence: while the medicine causing one additional respiration only will cause the blood to be decarbonized slowly; and, of course, to be heated slowly.

This is the difference between stimulants and tonics; but there is another difference between what are called "diffusible" and ordinary stimulants, and between both of these and tonics. It consists in the length of time the effects of each lasts upon the system. Here again we are supposing that these medicines are given to a person in health. For, unfortunately, if a dose of the most diffusible stimulant is given to a person whose blood is not properly decarbonized, and is in an excited state, we may judge with some degree of certainty as to the amount of increased excitement which will be produced by it, but we can form no idea as to when that excitement will stop of itself. For heat, being once produced in the blood of a person so situated, goes on to reproduce heat by causing increased breathing, as we have before explained. Doses of medicine of this kind are often the causes of what are called, "relapses of the disease." But fortunately for those who prescribe such remedies, the relapse is always attributed to the will of the "disease." The effect of diffusible stimulants lasts two or three hours; that of ordinary stimulants, six or eight, and that of tonics, ten or twelve hours.

Tonic medicines are those which increase the action of the heart, arteries, and lungs but little: yet that little lasts the greatest length of time, slowly decarbonizing, and giving additional heat to the blood. Ordinary stimulants are those which act in the same way, but more rapidly, their effects lasting for a shorter time; diffusible stimulants are those which act most rapidly of all, and their effects upon the system last the shortest time. Tonic medicines are therefore the most lasting stimulants, when given in large doses, and all stimulants may be made to act as tonics by giving them in small ones; but such practice

would be troublesome. The experience of every one in the practice of medicine must prove the truth of the above assertions.

Our readers, we hope, must here see for themselves, and understand, the injurious consequences of giving tonic or stimulating medicines, or using such remedies as bathing the feet in warm water, stimulating drinks, hot rooms, many blankets, etc., to force perspiration, etc., where the blood is not properly decarbonized, and there is already too much action in the heart, arteries and lungs, and too much heat in the blood, as these remedies are sure to drive that action faster, and to increase the quantity of heat in the blood. This heat being once produced keeps itself up by continuing the action already increased in the heart, arteries, and lungs, and, in this way, changes what were before slight cases of intermitting or remitting fevers into continued fevers, slight "colds" (as they are called), into pleurisies, etc., unless, as we have before stated, free perspiration comes on and carries off the heat of the blood down to the healthy point of 98° , which will certainly not be done, unless the blood is at the healthy state of decarbonization.

Here we wish to bring the minds of our readers to a knowledge of the fact, that the action of stimulating remedies upon the system were not understood, nor could be understood, until the effects of breathing atmospheric air upon the blood were discovered. How these remedies act upon the system is not indeed yet understood by thousands who profess to practise the healing art. Hence, stimulating and what are called "sweating" remedies have been heretofore, and are now, used by many as specifics against what are called "colds," "rheumatisms," etc.; and tonic medicines, such as quinine, etc., against intermitting fevers, etc., which, of course, are as often made to do harm as good.

But, as we have before remarked, practitioners of medicine have been cautious enough to induce the people to believe, that diseases are substantive somethings, which have will and power of their own; that they can become better or worse at their own

option; that they can be obstinate; and that they can make their attacks underhandedly, insidiously, etc. Hence, sick persons but rarely suppose that the remedy they have taken is the cause of the increased derangement in the action of their systems, but implicitly believe that the disease itself chooses to be worse, to be obstinate, etc.

To place this matter in as plain a light as possible, we state briefly the following case of very recent occurrence. A lady wounded one of her fingers with a piece of china. The wound soon took on the appearance of inflammation of a high grade of action. Depleting and cooling remedies were resorted to; but the inflammation became worse and worse, and I was requested to visit her. The wounded finger, hand, and arm, were very much swollen, and of a dark-red color. The weather was intensely cold, which added to the probability of its being inflammation of high action; but, upon examining her pulse attentively, it was found to be extremely soft, and the blood was easily stopped by the slightest pressure of the fingers. She was requested to take quinine in wine every two hours; and her hand was enveloped in pounded charcoal, which at the time could have no other than a soothing effect.

In the course of a few hours, the number of the lady's respirations increased, and the warmth of her blood rose a little above the healthy standard. To a superficial observer, she appeared to have a slight fever, but it was the healthy action of the circulation restored to the hand and wounded finger (it being too weak and low before), and, in a very few days, all was well.

Such cases as this, the writer has seen many times. And he is well aware that, if a mistake had been made, and he had used depleting and cooling remedies, the lady would have lost her hand, if not her life, in a day or two. But, in the other event, if the action going on in her system had been too strong for the restoration of healthy action in her hand, the remedies which were resorted to would have assisted in destroying life, not only in her hand, but in her whole body, in a very short time.

But, let it not be supposed, that simply giving remedies to raise the pulse was all that was necessary to insure her having a sound hand and good health; for the very fact of her pulse falling below the healthy point, and her hand becoming so much inflamed, were sufficient proofs that her blood was not in the state of proper decarbonization to keep up the healthy action of her system as soon as her hand was wounded. This healthy state of decarbonization, therefore, had to be brought about either by such remedies as would act upon the lungs to restore it, or by such as would act upon the liver to bring about that effect. The soft and weak state of her pulse, showed that, in her case, remedies which decarbonized the blood through the lungs were right. Thus we see that the pulse is the only sure and safe guide.

We have now, in a variety of ways, attempted to explain the nature of life, or action, in the human system; the means by which it is carried on, and regulated, so as to produce the development of the organs of the system and the healthy action of the whole; how the food is taken into the stomach, and its nutritive part converted into chyle; that chyle is taken into the blood, and both carried to the air-cells of the lungs, to be decarbonized, and receive their vital heat from the oxygen of the atmospheric air, which is taken into those air-cells at every inspiration of the lungs; that the lungs alone would have been sufficient to decarbonize and give vital heat to the blood, so as to support life, and carry on the development of the organs of the system, if man had been confined to a uniform state of the air as to temperature and purity; but as his Creator intended that he should inhabit every latitude, and as there were to be changes from the cold of winter to the heat of summer, in the purity of the air, and its states of expansion, it became necessary to keep up a uniform state of his blood; that there should be some auxiliary organ in his system which could assist in decarbonizing it, without at the same time adding heat to it; that this is done in the liver by the secretion of bile; that, from

the changes that take place in the states of the air breathed, and in the habits and fashions of human life, derangements of action in one or more of the organs of the system sometimes take place, which are called "diseases"; that these effects were foreseen by a wise and good Creator, and the pulse was made conspicuous at certain places, that man, being a rational creature, might judge by it, of the nature and force of the deranged action going on within; and that the same Wisdom and Goodness had caused certain vegetable, animal, and mineral substances to have certain effects upon the system, when the actions going on in it, and its temperature, etc., were in certain conditions, which can be judged of only by the pulse; that there are different states of the pulse, and particularly those which depend upon the backward pressure of the blood upon the valve of the heart and artery.

We have particularly endeavored to point out the injurious effects of too much heat upon the system, and to show that this one cause brings about more suffering and death among the people than any other cause whatever.

It must be evident to our readers that, although the subjects upon which we have treated are old ones, we have treated of them in an entirely new way, and that we have explained the laws of the animal economy differently from what has been said heretofore on that subject.

Our opinions and explanations are wholly the consequences of our giving our mind up, without prejudice or partiality, to the improvements in science which have been made in the last half century, and which are applicable to the advancement of the healing art. We conscientiously declare that nothing but the truth of our theory, and its importance to our fellow-creatures, as proved by our success in practice for the last ten years, could have induced us to write and submit them to the people, with the hope that they will be taken up by others, improved upon, and carried into practice, so that the practice of medicine may become fairly a science.

In conclusion, we beg those who may read these pages not to look upon their contents as simply subjects of criticism, or which may be deferred as unimportant. For, if they wish to preserve themselves, their children or friends, from suffering and premature death, they should, as soon as possible, begin to reflect on the nature of life, on the action of the pulse, on the causes of its actions, and the indications of its actions; to learn how to feel their own pulse, and the pulse of others; to reflect upon the source of heat to the blood, its effects upon the solids and fluids of the body, and upon the pulse; and to reflect upon the effects of medicines and other remedial agents upon the system in its healthy state, etc.

We beg of them, also, to forget as soon as possible all that they knew, or thought they knew, of particular "diseases" (as they are called) and their remedies. We assure them that, as soon as these things are done, they will feel as if relieved of an incubus, which had weighed down their minds, and the free exercise of their judgment, all their lives; and that they are now ready to make a new start in their reflections, and to do something for themselves, their children, and friends, when circumstances shall call for it, which shall be guided by reason and truth, in the doing of which, that Almighty Goodness may aid them is the earnest prayer of the author.

